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## **WebQuest Technologies: Developing Communicative Sphere of Preschool Children with Down Syndrome**

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### **Abstract**

The article reveals the direction of remedial work, using the WebQuest as a means of developing communicative competence of the children with intellectual impairments in general and with Down syndrome in particular. Within the framework of the study of communicative competence of the children with Down syndrome, we have carried out a theoretical analysis of the literature of domestic and foreign scholars. Based on the analysis of literature sources, the structural components of the communicative sphere of senior preschool-age children with Down syndrome were identified and a diagnostic programme was developed. The study identified and described the peculiarities of the communicative sphere of the child with Down syndrome, namely: a low level of expressive speech, an insufficient level of interest in a joint activity, incomprehension of communication norms and incomprehension of cause-and-effect relationship in communicative situations. The aim of the forming experiment was to develop a methodology for enriching communicative competence of the senior preschool-age children with Down syndrome. The paper describes the specifics of the use of WebQuests for the formation of communication skills during a remedial and developmental process. "A Magic Forest" WebQuest technology, which was developed by us, includes tasks aimed at forming components of communicative competence, the lack of which was revealed during the ascertaining experiment, namely: the development of expressive speech, the development of interest in a joint activity, the development of an understanding of communication norms, understanding cause-and-effect relationship in communicative situations. The article presents the results of experimental verification of the effectiveness of the WebQuest technology in the development of communicative competence of the child with Down syndrome. Such a form of work as WebQuest actuates the cognitive activity of a child with intellectual impairments and makes a remedial and developmental process more effective, interesting, diverse, and modern.

**Keywords:** WebQuest technology, Communicative sphere, Communicative competence, Down syndrome, Preschool age.

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## **Introduction**

In recent years, special attention is paid to the problem of educational and social adaptation of children with intellectual impairments in general and with Down syndrome in particular. One of the main reasons for the social maladaptation of this category of children is a low level of communication development. Therefore, this raises the question of the search for innovative methods of their integration into a social environment and the development of communication skills. As one of such methods, we think it is expedient to consider the use of information and communications technologies, namely the WebQuest technology.

The studies of many scholars are dedicated to the issue of studying the speech peculiarities of children with Down syndrome, namely R. Avhustov, M. Bruni, S. Veinerman, N. Hireenko, P. Zhyianov, L. Kumin, P. Launteslager, A. Maller, I. Panfilov, A. Savytskyi, P. Winders, D. Fiedler, and others (Panfilova, 2019). However, more research on this topic needs to be undertaken.

A theoretical analysis of the works of V. Bykov, R. Hurevych, M. Koziar, S. Sysoieva, O. Spirin, Ye. Polat, V. Trainev and I. Trainev shows that in today's conditions, the use of modern information and communications technologies has become an integral part of working with children with developmental disorders (Morze, 2011).

The problem of the development and use of WebQuests in an educational process has been actively studied by such scholars as B. Dodge, T. March, M. Hrynevych, and H. Shamatonova (2010). This gives grounds to affirm that the role of information and communications technologies in the development of special education transcends the boundaries of the traditional role of a new means of teaching and remediation, as it allows to make a significant contribution to resolving current issues of modern remedial pedagogy.

Thus, WebQuest is most frequently considered by scholars as an educational technology only for children with normative development. Theoretical study of the issues of the use of the WebQuest technology as a means of developing communicative competence in children with Down syndrome has shown that this issue needs further research and is relevant.

The aim of our study was to reveal the peculiarities of using the WebQuest as a means of developing communicative competence of the children with Down syndrome.

According to the aim of the study, the following tasks of research were defined:

1. To analyse the scientific literature on the issue of development of communicative competence of the children with Down syndrome and to determine the theoretical bases of the study.
2. To identify the specifics of the use of WebQuests for the development of communication skills in children with Down syndrome.
3. To determine and test experimentally the effectiveness of the WebQuest technology in the development of communicative competence of the children with Down syndrome.

## **Peculiarities of the Development of Communicative Competence of the Children with Down Syndrome**

Within the framework of the study of communicative competence of the children with Down syndrome, we conducted a theoretical analysis of the literature of domestic and foreign scholars. In the course of studying the literature, we found that each of the researchers considered the notion of "communicative competence" in their own way, in particular, as communicative abilities A. Panfilova (2000), S. Makarenko (2001), B. R. Nancy (2000), communicative knowledge L. Orban-Lembryk (2003), A. Panfilova (2000), O. Kovalenko (2008), communicative features T. Shcherban (2004), A. Derkach (2010).

Communicative competences as the basis of general human culture are characterized by personal value, are formed in all types of activities and communication and, in their turn, unite emotional culture, thinking and speech culture. The concept of communicative competence includes a set of skills (linguistic, socio-cultural and pragmatic) necessary for the implementation of a communication process in accordance with specific purposes and conditions of communication.

According to psychological and pedagogical research, communicative competence includes the following components:

1) an emotional one (includes emotional sensitivity, empathy, sensitivity to others, the capacity for mutual emotional experience and sympathy as well as attention to the actions of partners);

2) a cognitive one (associated with the cognition of another person, includes the ability to predict the behaviour of another person);

3) a behavioural one (reflects a child's capacity for cooperation, joint activity, initiative, adequacy in communication, organisational skills, etc.).

Communicative competence can be rightly considered leading and core because it is the basis of all these competences. Today, communicative competence needs to be consistently formed and developed in close connection with learning and information skills. The development of communicative skills in oral and written speech must be considered not just as a skill, but as a means of the successful acquisition of any subject knowledge and skills.

By way of the theoretical study of the works of A. Vasylenko, Van de Rey, I. Hladchenko, P. Zhyianova, L. Zymina, R. Kovtun, O. Kocherha, N. Lishchuk, I. Panfilova, E. Pole, E. Sobotovych, and O. Chebotarova, it was ascertained that children with Down syndrome due to certain physical and cognitive difficulties have problems in acquiring communicative competences.

It was ascertained that in each child, understanding of the speech of those who surround them leaves behind the expressive speech. That is, a child understands the speech addressed to him/her, but cannot answer an interlocutor. It is difficult for him/her to express their needs and requests, and this hinders their general development and leads to behavioural problems. Therefore, all over the world, researchers and practitioners offer to temporarily supplement a child's expressive speech with auxiliary means of communication that can help narrow this gap and prevent possible developmental disorders (Zhiyanova, 2012).

During the prespeech period, the children with Down syndrome have a developmental inhibition, which leads to the belated formation of the processes of perception; not only lallation does not occur in due time, but childish babbling too. These processes are reflex, they usually occur in the first months of a child's life, progress regardless of the surrounding environment and the influence of adults. The first babbling words can occur during months 13-17 based on the imitation of what was heard and then turn into spontaneous speech.

The formation of speech sounds, tempo, and prosody in children with Down syndrome can differ significantly from the norm, in particular, the following peculiarities can be observed: the decreased muscle tone of the articulatory muscles that is hypotension, which is characterised by the relaxed muscles of the articulatory system. A child may have the following manifestations of hypotension: a small half-open mouth, macroglossia, high palate, thick lips, a short frenulum; possible abnormalities of the teeth and sometimes their partial absence. The consequence of these peculiarities is voice, prosodic, articulatory and phonemic defects that impair the fluency, intelligibility, expressiveness and clarity of speech (Pahomova, 2017).

The children with Down syndrome cannot integrate their feelings, they have impaired ability to concentrate on several phenomena, listen, watch, and react, so they do not have a possibility to

process signals coming from more than one stimulus at a particular point in time taken separately. The children in this category have difficulty in learning the grammatical structure of speech as well as the meaning of words. They often do not distinguish the sounds of those who surround them and cannot learn new words and phrases. It has also been found that children with Down syndrome imitate speech selectively and their speech development comes from imitative to the spontaneous use of words and collocations.

Regarding their social interaction, children with Down syndrome are perceived by others as pleasant and funny. Such behaviour and sociability can promote more positive contact with other people. When choosing friends, the children with Down syndrome are guided by the same criteria as ordinary children (general gender, ethnicity, and approximately the same age).

Play interaction of the children with Down syndrome with their partners conforms to general rules. The level of play in same-sex dyad is higher than in a heterosexual one. The girls' play is more emotional; the boys' play is more oriented on a result than the process of interaction itself.

Loneliness is perhaps the most serious problem for adolescents with Down syndrome. Education at secondary schools has significantly improved their speech and social skills, enhanced academic performance, but the inclusion of these children in a school community did not happen. The children with Down syndrome are much more successful at establishing friendships outside of school and with people of different ages (<https://downsideup.org/ru/catalog/article/osobennosti-razvitiya-i-psihicheskogo-funkcionirovaniya-detey-s-sindromom-dauna>).

Thus, the development of communicative competences of the child with Down syndrome has a number of specific regularities due to the peculiarities of mental and physical development of this category of children. The low level of expressive speech development and comprehension of the addressed speech is often a reason to avoid social interaction of the children with Down syndrome with those who surround them. Therefore, motivation for speech interaction, support of the social environment and the use of effective means of speech remediation are necessary to improve the communication skills of the children with Down syndrome.

### **The Use of Information and Communications Technologies in Special Education**

Information technologies are an integral part of the modern world. They largely determine further economic and social development of humankind. Under these conditions, the educational system also requires revolutionary changes. Hence, we can say that this issue is of particular relevance in the modern educational environment because today, qualitative teaching subjects cannot be done without the use of tools and possibilities provided by computer technologies and the Internet.

Information technologies (IT) is a set of methods, production processes, software, and hardware that are integrated to collect, process, store, distribute, display and use information in the interests of its users. These are technologies that ensure and support information processes that are the processes of search, collection, transmission, storage, accumulation, dissemination of information and the procedures for accessing it.

The term "information and communications technologies" (ICT) is often used as a synonym for information technologies (IT), although ICT is a more general term that emphasises the role of unified technologies and integration of telecommunications (telephone lines and wireless connections), computers, subroutines, software, storage, and audiovisual systems that allow users to create, gain access, store, transmit and modify information. In other words, ICT consists of IT as well as telecommunications, broadcast media, all types of audio and video processing, transmission, network management and monitoring functions (Shvachich, 2017).

The coverage of the experience of using ICT in general didactics is presented in the works of V. Boltianskyi, V. Bezpalko, Yu. Doroshenko, A. Yershov, O. Zhuk, M. Zhaldak, V. Monakhov, N. Morze, V.

Rudenko, and others. Many scholars emphasise the fact that in combination with traditional means of remedial influence, computer technologies promote the development of mental processes in children with intellectual impairments, a child's personality in general and improve the quality of education (Kryuchkova 2003-2009).

The inclusion of information and communications technologies by specialists in various content areas of remedial education, allows you to use them as a tool for an educational activity that corresponds to the age, level of development as well as the step-by-step tasks of remedial education of each child.

A search of the special literature showed that most of the available research on the above-mentioned issue reveal only some aspects of the introduction of new information technologies to the remedial process. In particular, psychological and pedagogical conditions for introducing information and communications technologies and a methodological system of educational activity development by means of computer technologies are insufficiently studied at present. The optimal combination of the use of computer methods with traditional ones determines the effectiveness of the use of new information technologies in remedial work. It should be noted that recently a large number of computer programs have appeared on the software market, which can be successfully used in educational, remedial and developmental activity as well as for psychological support of preschoolers.

Remedial and educational work with the children with special educational needs involves the use of specialized or adapted computer programs (mainly educational, diagnostic and developmental ones). The effectiveness of their use depends on the professional competence of an educator. The research analysis shows that it is the most expedient to use computer tools in educational and remedial work with children who reached the age of five, as the limitation is imposed by the development of indirect activity (a child uses a computer keyboard and, at the same time, watches changes in the image on the screen), as well as by a sufficient level of development of mental processes and volitional self-regulation. In addition, it is believed that the formation of various types of play activity is a necessary prerequisite for further child's proficiency in a computer game. Too early use of computer games can slow down the development of traditional forms of play that ensure a full-fledged personal and mental development of a preschooler. This is especially relevant in remedial and educational work with children who have developmental disorders because their play activity often differs from the norm.

Thus, the use of information and communications technologies is one of the most important and sustainable trends in the global educational process. In remedial education, computer equipment and other information technology tools are becoming increasingly used in various areas of the remedial process in recent years.

Informatization has significantly affected the process of acquiring knowledge. New learning technologies based on the information and communication principles allow to intensify an educational process, increase the speed of perception, understanding and depth of knowledge acquisition.

### **The WebQuest Technology as a Means of Developing Communicative Competences of the Children with Down Syndrome**

The widespread use of information and communications technologies in remedial education for children with special educational needs has made it possible to make the process of development not only interesting but also more effective. Therefore, we have decided to explore the issues of development of communicative sphere with the help of information and communications technologies, namely the WebQuest technology.

The developers of the WebQuest are Bernie Dodge and Tom March (1995), professors at the University of California, San Diego. The WebQuest involves the creation of a problem-based task with the elements of a role-playing game, for the completion of which the Internet resources are used.

The WebQuest technology allows to realize in full the use of visual aids, multimedia and interactivity of the process of developing communication skills in the children with Down syndrome. This is a new form of organisation of an educational process and a new didactic model of technology of remedial education (Bobrovskih, 2008).

An educational WebQuest is a site on the Internet, on which they work, study and perform a particular educational task. The purpose of work in this educational environment is to organise the work of children on the Internet and the formation of their key competences. H. Shamatonova emphasises the fact that a WebQuest is an exciting journey on the Internet, which involves enquires in various search engines, obtaining a fairly large volume of information, its analysis, systematization and subsequent presentation (Shamatonova, 2010).

The WebQuest technology allows to successfully integrate the Internet into remedial activity, leading children to the development of communication skills, contributes to the achievement of personal results of the children with Down syndrome. This technology allows you to achieve important educational results:

- personal ones – the formation of motivation to learn something new and self-improvement, understanding the possibilities of self-actualization, the showing creative potential and overcoming internal barriers and anxiety.

- meta-subject ones – the development of mental functions, the development of communicative competence, skills in working with information, self-organisation, ability to perform various social roles.

- subject ones – gaining new knowledge and its application in education and subject situations, and formation of a scientific type of thinking.

According to Ye. Polat, a WebQuest should have the following structure:

- introduction (formulation of a topic, description of the main roles of the participants, a scenario of the quest, a plan of work or review of the oral quest);

- the central task (tasks, questions to which children have to find an answer within independent research, what final result should be obtained);

- a list of information resources that can be used in research, including the Internet resources;

- a description of the main stages of work; a blueprint for action;

- a conclusion (research results, questions for further development of the topic).

A key section of any WebQuest is a detailed assessment criteria scale, based on which a project participants assess themselves. The same criteria are used by a teacher. A WebQuest is a complex task, so the assessment of its implementation should be based on several criteria focused on a type of a problem-based task and a form of presentation of the result.

A WebQuest is an interactive platform that will complement the use of WebQuests as a means of alternative education. It allows to form communication skills in the children with Down syndrome. It allows to make remedial classes more visual and dynamic, more effective from a viewpoint of learning and development of children and promotes the formation of key competences of students. Furthermore, the use of WebQuests allows a speech pathologist teacher or a speech therapist to bring the effect of visualization. It also helps a child in need of remedial education to learn the material in

full. Visual display of information helps to enhance the efficiency of any human activity. But in special education, it becomes especially important.

The use of WebQuests in various lessons with the children with Down syndrome allows to develop children's ability to communicate and navigate in the information flows of the surrounding world, to become proficient in practical means of working with information, to develop skills that allow to exchange information with the help of modern technical means.

Thus, WebQuests provide ample opportunities for developing of the communicative potential of a preschooler. Due to the use of information technologies the visual perception and auditory attention of the children with Down syndrome sharpen, which leads to positive learning outcomes and development of this category of children. Moreover, the use of WebQuests allows to make classes interesting and modern, to individualize and differentiate learning.

Thus, in the course of studying theoretical bases of the formation of communicative competence of the children with Down syndrome, we can say that foreign and domestic educators and psychologists recognise communication skills as one of the most important factors in their socialisation. According to psychological and pedagogical research, communicative competence includes the following components: emotional, cognitive and behavioural ones. We have found that the content of the concept of communicative competence is intensively considered in different branches of science and differs in diversity on the strength of the multifaceted nature of this concept.

When analysing the relevant literature, we have revealed that today communicative competence needs to be consistently formed and developed in close connection with educational and informational skills. Therefore, a promising trend is not only the use of information and communications technologies in teaching students but also acquiring by them the skills of information users, which offers prospects for raising their possibilities of social adaptation, communication, viability, access to education and expansion of their future scope of business activity.

The WebQuest technology is a different means of forming communicative competence of the children with Down syndrome. The WebQuest technology is a fundamentally new organisation of a remedial process and a new didactic model of learning technology. Remedial educators must understand that the use of this technology significantly affects all the components of a remedial process: the very nature, place and methods of joint activity of special educators and children change; the methods and forms of carrying out lessons at school transform. In other words, the introduction of such high-tech teaching methods to a remedial process inevitably entails significant changes in the structure of the entire education system.

### **Diagnosics of the Level of Communicative Competence in Children with Down Syndrome**

The aim of our study was to reveal the peculiarities of using a WebQuest as a means of developing communicative competence of the children with Down syndrome. To achieve this aim, a study was organised that consisted of three stages: diagnostic, forming, and control ones. The study had been conducted for three months on the premises of a preschool educational institution of a combined type No. 20 *Chervonyi Capeliushok (Little Red Riding Hood)* in Berdiansk, Zaporizhzhia oblast. The study involved preschool children at a preschool educational institution of a combined type No. 20 *Chervonyi Capeliushok (Little Red Riding Hood)* with normative development and one child with Down syndrome – Vladyslav (name has been changed) aged 7.

The aim of the diagnostic stage was to study the condition and determine the specifics of the development of communication skills in the child with Down syndrome. Based on the aim, the following tasks were set:

- to devise a diagnostic programme to determine the level of communication skills of the preschool children with Down syndrome;

- to establish the criteria for determining the levels of communication skills formation of the preschool children with Down syndrome.

During the diagnostics, we used such methods as interviewing people involved in raising the child, observation, experiment, and the project method. Techniques and criteria for determining peculiarities of the formation of the communicative sphere of the preschool child with Down syndrome are shown in Table 1.

**Table 1. Characteristics of the diagnostic programme**

Item No.	Properties investigated	Techniques
1	Peculiarities of the mental sphere, the current state of development of the communicative sphere components.	Conversation with the staff of the preschool educational institution, a written survey of persons involved in the upbringing of the child (according to N. Nizhehorodtseva and V. Shadrikov).
2	Peculiarities of the mental sphere, the current state of development of the communicative sphere components.	Observation on the child.
3	The child's behaviour in a situation of a moral choice.	A diagnostic exercise "Share the toys".
4	Communicative competence in communicating with peers	A diagnostic exercise "Paint the mittens".
5	Understanding the content of communicative situations, the adequacy of an emotional reaction, understanding the cause-and-effect relationship in a communicative situation, interest in the process of diagnostics and understanding the norms of communication.	Project conversation based on the cards of "Anxiety" technique (R. Teml, M. Dorky, V. Amen).

During the first week, we carried on a conversation with specialists involved in the upbringing and education of the child (two kindergarten teachers of a senior inclusive group "Veselka" (Rainbow), an assistant kindergarten teacher and a speech pathologist teacher) and their written survey according to N. Nizhehorodtseva and V. Shadrikov technique.

As a result of the conversation, we ascertained the peculiarities of the mental sphere and communicative activity of the child.

Vladyslav's adequacy of behaviour is sufficient, but with manifestations of a protest. The contact with an adult is established at once. The interest in the joint activity with him/her is subnormal. The eye contact is stable. He accepts the help of an adult easily. The object and practical actions of the boy are purposeful. He manipulates objects as intended. The pace of his work is fast, which is connected with the prevalence of excitation over inhibition. Vladyslav's cognitive activity in the classroom is short-lived. His self-control in the classroom is subnormal. While completing the proposed learning tasks, the child often uses the method of visual correlation.

The boy's systematised ideas are formed slowly. He is able to distinguish the essential features of objects (colour, shape, size) and their separate parts, but it is difficult for him to establish similarities and differences among objects and phenomena. The boy's attention is unstable and involuntary. The

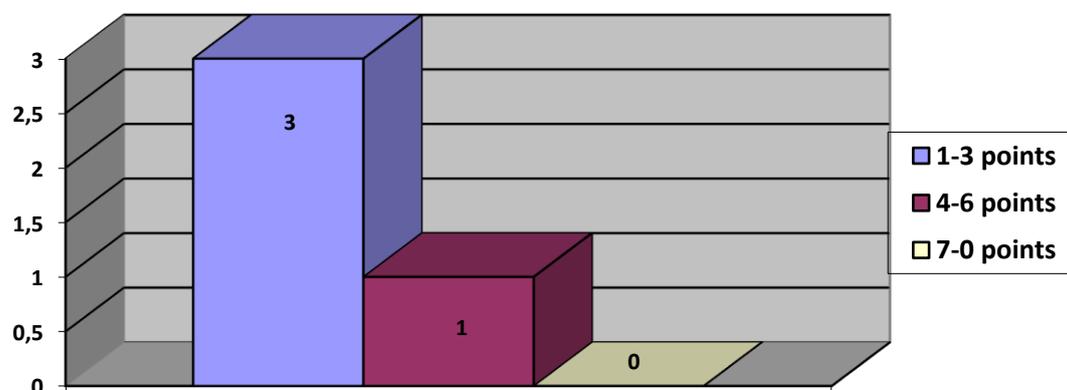
memory is short-lived. The rate of his educational material perception is slow. The material is memorized by Vladyslav's after multiple repetitions and is quickly forgotten. The thinking is visual and imaginative. The boy is capable of only elementary generalizations. In the process of special education, he can combine objects according to common characteristics. The child's ability to establish cause-and-effect relationships, to speculate, to draw his own conclusions, to correlate a part and a whole is at the stage of formation. The interest in the end result of his own activity is insufficient. He does not transfer his skills to new cognitive situations. The level of independence is insufficient.

Due to Vladyslav's lack of speech formation, the performance of verbal tasks by him is impeded. His comprehension of the addressed speech is limited. The boy needs simplification of questions and instructions for tasks. Vladyslav's emotional and volitional sphere is immature. The background of his mood is mostly cheerful and stable. He is characterised by impulsive behaviour. He is often impatient while carrying out his work. He has a low capacity for volitional restraint. The boy is uncritical of his own behaviour. His activity is not purposeful.

He feels good in a large group of children, but the friendship with them is formed at the level of early preschool age (he takes into account not personal qualities but simply the presence of a child next to him or the availability of the thing he needs). The norms of communication are partially formed.

The understanding of cause-and-effect relationships in a communicative situation is partially formed. The level of development of his play skills corresponds to an earlier age. The role statements are not formed. The adequacy of Vladyslav's emotional reactions depends on his mood.

The purpose of the written survey (according to N. Nizhehorodtseva and V. Shadrikov) was to diagnose the child's attitude to his peers. The results of the quantitative analysis of diagnostic results were presented in the chart (Fig. 1).



**Figure 1. The results of a survey of the child's attitude to his peers**

The chart shows that three respondents (75%) admit that the child has difficulty in communicating, but they are situational and/or due to some individual peculiarities of the child (1-3 points). One respondent (25%) explains the child's inability to establish contact with his peers by insufficient experience and/or self-doubt (4-6 points).

Thus, the results of the survey showed that kindergarten teachers believe that the child has difficulty in communicating with his peers, but they are not related to a negative attitude to other children, but the lack of expressive speech formation and a specific character of the disorder.

In order to structure the observations, we devised a form indicating the components of communicative competence and the current state of development of each component.

**Table 2. The form of observation on the current state of development of communicative competence components**

A component of communicative competence	State of development
A motivational and personal one (the child's need for communication, in the process of which the peculiarities of his personality are revealed, which directly affect the content, process and essence of communication).	The child has a high level of need for communication, but due to the lack of expressive speech formation, the communication process is impeded. Understanding of the addressed speech is at a sufficient level. The contact with an adult is established at once. The interest in the joint activity is subnormal. He accepts easily the help of an adult. He feels good in a large group of children. The role statements are not available.
A cognitive one (knowledge from the area of human relationships concerning the meaning and values of communication as well as norms of behaviour in a society).	Knowledge from the area of human relationships concerning the meaning and values of communication is absent. The norms of behaviour in society are not formed.
A behavioural one (the way of responding to a specific situation and competences).	Vladyslav's adequacy of behaviour is sufficient, but with manifestations of a protest. He is characterised by impulsive behaviour. He often shows impatience. The boy has a low capacity for volitional restraint. He is uncritical of his own behaviour.

Thus, with the help of the observation, we ascertained that Vladyslav's level of formation of communicative competence components is low. It is difficult for him to express his thoughts and contact his peers due to a specific character of the disorder.

To diagnose the child's behaviour in a situation of a moral choice, we chose the diagnostic exercise "Share the toys". To determine the level of formation of an empathic aspect of a communicative sphere, we relied on the following indicators: a low level – retains toys to himself and behaves aggressively; an intermediate level – shares toys at his own discretion, does not establish communication and does not show empathy; a high level – establishes communicative interaction, is interested in the opinion of others concerning the distribution of toys and shows empathy.

While conducting this examination, two children were present from a junior group "Romashky" (Daisies) aged 6, who were not acquainted with Vladyslav. Vladyslav was asked to share the toys with the children as he pleased. He kept two toys for himself and shared the rest among the other participants at his own discretion, without interacting. Thus, we ascertained that Vladyslav has an average level of communication skills.

Determination of communicative competence in communication with the peers was based on a diagnostic exercise "Paint the mittens". The silhouette images of gloves and 2 sets of 6 coloured pencils were used. Vladyslav and his classmate Danyil were given one picture of a mitten each and asked to colour and decorate them but in such a way that they could make a pair, that is were the same. The boys were explained that they should first agree on what pattern to draw and then start drawing. The children received the same set of pencils.

In the course of carrying out this exercise, it was ascertained that the children could not agree, did not come to a joint decision because, from the very beginning of carrying out the exercise, Vladyslav took all the pencils from Danyil and drew himself. Danyil's persuasion was in vain. So, in that case, we were able to see that Vladyslav had a low level of communicative competence in communicating with his peers.

The purpose of the picture-based conversation based on R. Teml, M. Dorky, and V. Amen (2002) "Anxiety" technique was not only to clarify the level of anxiety but also to identify the child's understanding of the content of communicative situations, peculiarities of an emotional attitude to different situations of interaction and determine the adequacy of response, depending on his individual experience.

**Minutes of the Conversation "Determining the Level of Communication Skills Formation"**

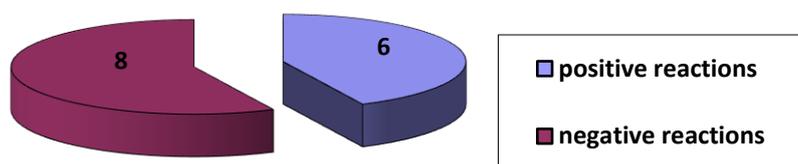
- Who is depicted in the picture?
- What are these people/children doing?
- Do you think the child is merry or upset? Why?
- What could cause this emotion in the child?
- How could these emotions be avoided?
- How would you calm/cheer up the child?
- What words would you tell the child in this case?
- Did this person do the right thing to the other one?

The results of the conversation revealed the peculiarities of the formation of communicative components, which are presented in Table 3.

**Table 3. The qualitative analysis of the conversation "Determining the level of formation of communication skills"**

Components	Formation level and peculiarities
Understanding the content of images	The boy understood the content of the images and the addressed speech, but his expressive speech and common expressions were limited. Some of them he depicted with gestures and short exclamations. The boy characterised several pictures by unextended sentences or collocations.
The adequacy of the emotional reaction	The emotional reactions to some images were inadequate: the boy chose emotions of joy instead of sadness, and vice versa. It was noteworthy that those images related to relationships with a family and parents. In other cases, the cards shown evoked an adequate emotional reaction.
Understanding of cause-and-effect relationship in the communicative situation	During the sighting of stimulating cards and a conversation, the child was encouraged to establish cause-and-effect relationships by asking, "What could cause this emotion in the child? How could these emotions be avoided? How would you calm/cheer up the child?" The boy did not answer these questions. That is, understanding of cause-and-effect relationships in the communicative situation was unformed.
The interest in the process of diagnostics	During the first attempt of diagnostics, Vladyslav took an active stand of protest. The child was not interested in further diagnostics attempts but performed the tasks.
Understanding of the norms of communication	The boy knows the speech formulas of greeting and request, but the formulas of gratitude, apology and sympathy were unformed in him.

The quantitative and qualitative analysis of information recorded in the minutes showed that the number of negative reactions is 8 points out of 14 or 57.1% out of 100%.



**Figure 2. The chart "Results of the "Anxiety" test (R. Teml, M. Dorky, W. Amen).**

The qualitative analysis of the answers shows that negative reactions were observed in such columns as "A child and a mother with a baby", "An object of aggression", "Playing with older children", "Going to bed alone", "Washing oneself", "Scolding", "Ignoring", and "An aggressive attack".

Thus, according to the qualitative and quantitative analysis of the answers to the "Anxiety" test, Vladyslav has a high level of anxiety, which should be taken into account when communicating with others. Therefore, the following can be stated: the child has a low level of communication skills and a high level of anxiety, but at the same time he has a rich potential that can be realised with the help of special education.

#### **Peculiarities of the Methods of Developing Communicative Competence of the Children with Down Syndrome by Means of the WebQuest Technology**

The data obtained in the course of the ascertaining experiment showed that the child has a low level of communication skills, namely: a low level of expressive speech, an insufficient interest in a joint activity, an insufficient level of understanding of communication norms and incomprehension of cause-and-effect relationship in communicative situations. Therefore, this indicated a need to create a methodology for developing this type of activity. The methodology is aimed at a senior preschool-age the children with Down syndrome.

The methodology which had been developed by us for conducting the web-quest "A Magic Forest" included tasks aimed at forming the components of communicative competence, the insufficiency of which was revealed during the ascertaining experiment, namely:

- 1) development of expressive speech;
- 2) development of interest in the joint activity;
- 3) development of the understanding of communication norms;
- 4) understanding of the cause-and-effect relationship in communicative situations.

The programme of remediation of communicative abilities with the help of the WebQuest "A Magic Forest" was developed in accordance with Vladyslav's age peculiarities of and his sphere of interests.

The proposed WebQuest is designed to be performed and accompanied by adults in speech pathology classes or at home. It was created to arouse children's curiosity and stimulate:

- cognitive activity (the desire to learn something new and motivation to learn);

- communicative activity (the desire to communicate, share one's own thoughts and impressions with others, the ability to establish social relationships and understand the addressed speech);

- creative activity (to create, invent and try).

WebQuest type: short-term.

Number of participants: individual.

Form: an interactive story.

The WebQuest structure:

1. Introduction.

2. Tasks.

3. Procedure and resources.

4. Assessment criteria.

5. Links to resources.

6. Comments for a speech pathologist teacher, parents and kindergarten teachers.

Types of tasks that can be variously assigned in the WebQuest:

1. Narration.

2. Planning or designing.

3. Self-knowledge.

4. Compilation.

5. Analytical tasks.

6. Creative tasks.

Expected personal results:

- acceptance and getting used to a social role, development of motives for social activity and formation of a personal sense of learning;

- development of ethical feelings, amicability, emotional and moral sensitivity, understanding and empathy for each other's feelings;

- formation of aesthetic values and feelings;

- development of skills of cooperation with adults and peers in various social situations, ability not to create conflicts and to find ways out of conflict situations;

- the presence of motivation for creative work and work for a result.

- learning ways to solve problems of creative and searching character;

- active use of information and communications technologies to complete communicative and cognitive tasks;

- willingness to listen to an interlocutor and maintain a dialogue;

- willingness to recognize the possibility of the existence of different viewpoints and the right of everyone to have their own;

- to express one's own opinion and argue their viewpoint and assessment of events;

- definition of a general purpose and ways of its achievement; the ability to agree on the distribution of functions and roles in a joint activity; to exercise mutual control in a joint activity, to adequately assess one's own behaviour and the behaviour of others.

This instruction was prepared for speech pathologist teachers and parents: "The quest was created in PowerPoint. To start the journey, you need to open a document with the desired name. To follow the links, click on the image, then the page of the site or video will open. After viewing, close the bookmark and return to the quest.

The created virtual information space is quite wide. It has links to the Internet resources, where much more information is collected than a child can learn during one Internet journey. This is done so that a child has the possibility to return to the point that interested him/her several times, gradually forming a cognitive interest and providing an opportunity for varying study of a topic. A child can choose the part of the virtual space that interests him/her, go where he/she wants, explore a topic as long as he/she wants, and, at the same time, use the most interesting ways of collecting and processing information.

### **Analysis of the Effectiveness of Methods**

During the quest, a child had a possibility to carry out various tasks with an adult, which prepared him/her step by step for comfortable interaction with the surrounding world.

From the first task, Vladyslav expressed an interest in the work on the computer. He chose the hero who will go through the whole quest with him, which became a kind of diagnostics of the child's self-sentiment in communication. Carrying out tasks and watching videos became an incentive for Vladyslav's active speech. The boy tried to express joy, sympathy and accompanied each task with such shouts as "Look", "I was able to perform", etc.

With the help of the quest, the child could immediately see the results of his activity. Situations of success were created, which, in turn, had a positive effect on Vlad's communicative process with his peers.

### **Examples of Carrying out the WebQuest Exercises**

*Exercises of the series "An Animal's Birthday" (2 scribing videos).*

*The procedure of carrying out the exercises and the child's answers:* Describe who and what the artist drew and answer the questions. (The child pointed a finger at the animals. He called a Bear and a Wolf using full words, and the names of the other animals were called using one initial sound: a Squirrel – "S", Fox – "F").

What made all the animals gather at the wolf's house? (He pointed to the cake and said, "Holiday"). What is the name of this holiday? ("Cake"). Let us remember together with the Wolf, maybe this holiday is called birthday? ("Yes, birthday").

What are the Squirrel and Fox doing? ("Gifts"). What is usually a birthday boy told during his birthday? ("Words"). Which words? ("Pleasant"). What would you wish the Wolf? ("Toys and food"). And the Bear wished it good health and success. Did the Bear do the right thing? ("Yes"). Why? ("These are nice words").

This exercise aroused the child's interest. Each re-doing it expanded Vlad's concept of communication norms and replenished his active and passive vocabulary. In the situation of a friend's birthday, he was able to formulate wishes and knew what the holiday was called. He also started playing the game "Birthday" with his peers (he prepared a cake for someone, brought it to a child and said wishes. The boy gradually gained an understanding of the cause-and-effect relationship in communicative situations and the elements of joint play appeared.

*The exercises of the series "Teach an Animal to Get Acquainted" (4 exercises with the use of animated talking characters).*

*The procedure of carrying out the exercises and the child's answers:*

The Bunny is very shy and afraid to get acquainted with other animals. It does not know what to say when getting acquainted. Now he is going to say the words ("Hello!", "What's your name?", "Thank you", "My name is Bunny", "Happy Birthday!", "Goodbye!"), and you choose which of them are suitable for acquaintance. In the first lesson, Vladyslav chose only the option "Hello", and he shook his head at the other collocations. However, the task was not completed until the boy chose all the right options, so Vladyslav understood them and learned to pronounce.

The next stage of the exercise was the acquaintance of the Bunny with the children of a group. Vlad introduced the children on his own. He was involved in the process and expressed interest in the task.

### **Watching the Series of Videos "Obedient Dog Sonia"**

The video showed the norms of behaviour and use of polite words. The boy showed interested in the video and tried to say the words "Thank you", "Goodbye", "Please", "Is it possible? ...", "Share with me, please", "Have a nice day" and so on. Two weeks later, he learned to say these words in practice when talking to adults and children.

Thus, such a form of work as a WebQuest actuates a child's cognitive activity, allows to make a remedial and developmental process more interesting, diverse, modern and effective.

At the end of the remedial work according to the proposed methodology, the final diagnostics of the level of development of the communicative sphere was organised. At this stage, the diagnostic methods that are identical to those at the stage of ascertaining were used. The results of the final diagnostics indicate qualitatively and quantitatively positive dynamics in the development of communicative competence (Table 4).

**Table 4. Table of dynamics of the level of communicative competence development**

	<b>Investigated properties during the final diagnostics</b>	<b>Techniques</b>	<b>Dynamics of the level of development</b>
1	Peculiarities of the mental sphere, the current state of development of the communicative sphere components.	Interview with the staff of the preschool institution, written survey (according to N. Nizhehorodtseva and V. Shadrikov) and observation.	Average level
2	The child's behaviour in a situation of a moral choice	"Share the toys"	Medium level – high level
3	Communicative competence in communicating with the peers	"Paint the mittens"	Low level – medium level
4	Understanding the content of communicative situations, the adequacy of an emotional reaction, understanding the cause-and-effect relationship in a communicative situation, interest in the process of diagnostics and understanding the norms of communication	"Anxiety" test (R. Teml, M. Dorky, W. Amen)	Medium level – high level

The qualitative analysis of the child's communicative competence and ways of his interaction with the peers and adults showed that:

- the child's behaviour in a situation of a moral choice has a high level of indicators of moral qualities; the child learned to share the toys and learned the rules of playing with toys;

- Vladyslav demonstrated a high level of empathy and communicative competence when re-doing the task "Paint the mittens";

- the level of understanding of the content of communicative situations, cause-and-effect relationship and norms of communication improved; the emotional reactions became more adequate, the interest in the process of interaction with the peers and adults grew;

- the level of anxiety decreased in the number of negative responses from 8 to 6. We saw that the columns concerning emotionally neutral situations had positive reactions after that.

Thus, after having carried out lessons with the child with Down syndrome using the WebQuests, his low indicators of levels of development of communicative abilities changed to the indicators of "sufficient level".

Therefore, the WebQuest that was developed by us has a clear structure (introduction to a play situation, raising a problematic issue, distribution of roles, the performance of tasks within the framework of a role individually or in groups, assessment and summarising) and its preparation takes place according to certain stages.

It is very important to use this technology in a complex – gradually complicating tasks and introducing new elements of work, you can see some progress in the development of a child. In the long run within the framework of this educational technology, it is possible to achieve the following results: to develop communication skills in a child, to consciously choose the most effective ways of completing educational and cognitive tasks, to independently search and select necessary information.

One of the reasons why teachers refuse to use WebQuest technology is the misconception that this requires a high level of computer literacy. Another disadvantage may be the lack of reflection in the final stage. In this case, the connection becomes one-way, and the results cannot be corrected. Moreover, if the technology is used for the first time, it is necessary at a preliminary stage to carry out the preparatory work with speech pathologists or parents, explaining the aims, objectives and conditions of an educational project to them.

Such a form of work as a WebQuest actuates cognitive activity, allows to make an educational process more interesting, diverse, modern and effective.

### **Conclusions**

Communication is one of the most important factors in the general mental development of a child, the stages of which are characterised by a specific social system of relations of a child with other people, into which he/she gets from birth. Under the influence of communication, there occurs qualitative alteration of a child's psyche, resulting in the changes in his/her relationships with people and the surrounding reality in general. Senior preschool age is the most responsible stage of school childhood. High sensitivity of this age period determines great potentialities for the all-round development of a child. A full-fledged living this age, its positive acquisition is a necessary basis, on which further development of a child as an active subject of cognition and activity is built.

The work of children in such a variant of project activities as a WebQuest diversifies a remedial process, makes lively and interesting. The relevance of the WebQuest technology is not only that it implements the formation of communication skills in senior preschool-age children with Down syndrome but also that it helps to reveal an educational potential of network resources.

Today, it is necessary to consistently develop communicative competence in close connection with educational and information skills. The WebQuest technology has a positive effect on the formation of communicative competence of senior preschool the children with Down syndrome, namely it teaches to participate in a dialogue, to use the rules of speech etiquette, to use nonverbal means of communication and carry out work of creative character.

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