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Psychological and pedagogical principles of the organization of distance learning of primary school-aged children with cognitive development disorder

Principios psicológicos y pedagógicos de la organización del aprendizaje a distancia de niños en edad escolar primaria con trastorno del desarrollo cognitivo

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Abstract

The research involved children and parents of primary school-aged children with cognitive development disorder, as well as scientific and pedagogical workers who organized the psychological and pedagogical principles for organizing distance learning. The purpose of the research lies in establishing how effectively children, parents and their teachers cope with online distance learning during the pandemic, as well as investigating the extent to which such educational technology affects the emotional and behavioural state of the child. The research methodology is based on complexity. In the course of the research, the method of pedagogical experiment was used; observation and questionnaire methods were also introduced; the descriptive method, analysis and synthesis were used to review the theoretical material. The hypothesis lies in the fact that distance online education increases academic difficulties, changes the behavioural and emotional picture of a child with cognitive development disorder; consequently, the behaviour and emotional background will be limited by certain parameters, and this requires the active involvement of parents and teachers in the distance work process. The results of the research have revealed that distance education causes a number of restrictions for children with cognitive development disorder, namely: concentration of attention has decreased, anxiety has increased, and sleep has worsened. Behavioural changes predicted increased restlessness and aggression. Parents and teachers have had methodological, academic and everyday difficulties; all participants in the educational process have been more limited in the conditions of online distance learning. A complex of psychological and pedagogical fundamentals of education, additional classes with parents, and consultations with teachers help to cope with negative changes. In the future, it is worth continuing the study of the impact of the using psychological and pedagogical measures in the conditions of distance education, their impact on eliminating difficulties and improving the behaviour and emotional states of all participants in the educational process.

Key words: distance education, coronavirus, child psychology, health services.

Resumen

La investigación involucró a niños y padres de niños en edad escolar primaria con trastorno del desarrollo cognitivo, así como a trabajadores científicos y pedagógicos que organizaron los principios psicológicos y pedagógicos para organizar el aprendizaje a distancia. El propósito de la investigación radica en establecer qué tan efectivamente los niños, padres y sus maestros enfrentan el aprendizaje a distancia en línea durante la pandemia, así como investigar en qué medida dicha tecnología educativa afecta el estado emocional y conductual del niño. La metodología de investigación se basa en la complejidad. En el transcurso de la investigación se utilizó el método de experimento pedagógico; también se introdujeron métodos de observación y cuestionarios; para la revisión del material teórico se utilizó el método descriptivo, el análisis y la síntesis. La hipótesis radica en que la educación a distancia en línea aumenta las dificultades

académicas, cambia el cuadro conductual y emocional de un niño con trastorno del desarrollo cognitivo; en consecuencia, el comportamiento y el trasfondo emocional estarán limitados por ciertos parámetros, y esto requiere la participación activa de padres y maestros en el proceso de trabajo a distancia. Los resultados de la investigación han revelado que la educación a distancia provoca una serie de restricciones para los niños con trastorno del desarrollo cognitivo, a saber: la concentración de la atención ha disminuido, la ansiedad ha aumentado y el sueño ha empeorado. Los cambios de comportamiento predijeron una mayor inquietud y agresión. Los padres y docentes han tenido dificultades metodológicas, académicas y cotidianas; todos los participantes en el proceso educativo se han visto más limitados en las condiciones de la educación a distancia en línea. Un complejo de fundamentos psicológicos y pedagógicos de la educación, clases adicionales con padres y consultas con maestros ayudan a hacer frente a los cambios negativos. En el futuro, vale la pena continuar el estudio del impacto del uso de medidas psicológicas y pedagógicas en las condiciones de la educación a distancia, su impacto en la eliminación de dificultades y la mejora del comportamiento y los estados emocionales de todos los participantes en el proceso educativo.

Palabras clave: educación a distancia, coronavirus, psicología infantil, servicios de salud.

1. Introduction

The educational realities of the XXI century related to the COVID-19 pandemic have opened up a number of problems and challenges for the educational community; consequently, it is always necessary to focus on the evolution of educational systems (Anis, 2017). Changes in the psychological and pedagogical attitudes of teaching children of primary school age with cognitive development disorder are no exception (Bonati et al., 2018).

Modern social standpoints regarding work with inclusion require new innovative approaches, an active attitude to development, education, communication of a child with various types of disorders. This stimulates Ukrainian education, inducing to apply various means for the development of the child's personality, and the situation regarding the need to introduce remote forms dictates the search for ways to form virtual learning and communication skills. This determines the scientific issues of a number of modern investigations in pedagogy, teaching methodology, psychology and sociology.

The intellectual development delay of the child is associated with various neurodevelopmental disorders, a deficiency in brain functions, on which memory, motor skills, behavioural fundamentals, and impulse control depend (Wolraich, et al., 2019).

Children with intellectual development delay have different forms and degrees of retardation (severe, medium, light). This is expressed in retardation of the development of mental abilities and behavioural skills relative to the actual age. Some problems connected with a minor delay are not detected until the child goes to primary school and

feels the difficulties of the academic load. Along with this, the issues related to the difficulties of distance education pose new challenges to theorists and practitioners of teaching methodology in primary school. Children with a medium intellectual development delay are diagnosed during preschool age; this precisely why such children need active and correct treatment, otherwise they start to lag behind their peers significantly. Work with such children requires a lot of effort and skill from everyone around them. For this reason, a number of the researchers have discussed the psychological and pedagogical principles of the organization of distance learning of the child in the conditions of restrictions caused by the pandemic (Zhang et al, 2020).

In the conditions of implementation of distance education guidelines, it is worth working on creating favourable conditions for the child. All participants in the educational process, including parents, should be familiar with and use different formats of distance learning, which will allow maximally reducing the discomfort, difficulties and anxiety states of a child with cognitive development disorder, mitigating the negative effects inherent in educational realities in a post-Covid society.

2. Aims

The purpose of the research lies in establishing the level of effectiveness of the pedagogical and psychological principles of organizing and implementing the online distance learning of children with cognitive development disorder in the conditions of pandemic restrictions, as well as investigating the extent to which such educational technology affects the emotional and behavioural state in the practice of work of with children with intellectual development delay.

Based on the research purpose, it is planned to perform the research tasks as follows:

- to determine the demographic and professional characteristics of the respondents;
- to introduce changes in the education sphere regarding using the distance education technology and in the process of its application;
- to establish the level of interest of participants (students, teachers, parents) in the activities of the educational program (author's development).

3. Literature Review

The psychological and pedagogical principles of the organization of the educational process in the conditions of distance education were studied and considered in many aspects; this was due to the urgency of the issue and the need to urgently move to distance forms of education (Liu et al., 2021). The ways of stimulating the teacher in every possible way to support manifestations of independence and interest in the educational process are considered; the ways to choose more flexible methods of presentation of materials and control of knowledge are discussed (Muldrew, Miller, 2021); study of communication difficulties that arise when working in an educational space with inclusion is conducted. A number of communication difficulties experienced by students with

disabilities during education were described and analysed (Ashinoff, Abu-Akel, 2021), as well as the problems of working with parents as participants in the educational process for a child with intellectual development delay were also considered.

An important aspect of the investigations on the features of working with inclusion in the educational process is the consideration of the individual characteristics of the student, psychological differences and individual traits of all participants in the educational process, which contributes to the improvement of achievements in educational activities (Dweck, 2017).

From a therapeutic point of view, the algorithm of using psycho-pedagogical methods was considered as one of the main key components of success; the improvement of the condition was established, as well as the opportunity to offer the child adequate schooling, supporting their self-esteem and motivation in the long term (Longstreth et al., 2016), general promotion of psychophysical well-being (Cortese, 2020). The important discoveries have been made in the field of identifying the difficulties faced by a child with delayed intellectual development – reduced motivation (Morsink, et al., 2021) and ways to overcome it (Shulman, 2018; McIntosh et al., 2021).

Modern problems of teaching children with intellectual development delays were also discussed, forasmuch as the COVID-19 pandemic led to the closure of specialized schools or restricted access to them (UNICEF, 2020). The practice of using the services of an additional teacher (professional educator) as a support and a way to facilitate communication and the learning process was also discussed.

Distance online learning was widely used due to pandemic restrictions; however, the school system was not ready for it; consequently, it did not have the full range of technological tools, developed methods and practice of their using and applying. The Italian researchers even described situations where 57% of students shared their own computers with their family members (Save the Children Italia Onlus, 2020).

Research groups also carried out investigations concerning the impact of quarantine restrictions on children's studying at school. These children were deprived of the main context of learning, socialization, and the usual rules of communication (Segre et al., 2021). There are scientific works that have revealed that such a situation became especially traumatic for children with delayed intellectual development, physical and emotional development difficulties (Zhang et al., 2020). Changes in the schedule and life structure of such kids were undesirable, forasmuch as they destroyed important coping mechanisms.

Practical investigations were carried out in the direction of searching for effective models of work in conditions of distance education with children with ADHD and special needs, that is, for those who need a regular, clear daily schedule, a structured life schedule as part of the mechanism for overcoming disorders. The present academic paper has also considered the difficulties faced by parents, educational and pedagogical staff working

with children with special educational needs, namely: a sharp change in life cycles, the need to work at home and take care of children at the same time (Liu et al., 2021). It has been established that behavioural symptoms of anxiety, depression, PTSD, psychophysical discomfort were observed in all participants of the educational process (Mukhtar, 2020; Brooks et al., 2020).

Along with this, a number of surveys were conducted during the first wave of the COVID-19 pandemic, where an online survey of mothers of primary and secondary school students (children of 6-15 years old) was organized; the research goal was to study the experience of educational institutions in the field of additional education and its consequences for psychological well-being of children and academic performance (Scarpellini et al., 2021).

4. Methods

Theoretical methods of analysis and synthesis, descriptive method have been used for the effective implementation of the educational program presented in the research on using the psychological and pedagogical tools in the conditions of distance learning of primary school children with cognitive development disorder.

The research goal also envisages the involvement of the possibilities of empirical (diagnostic) methods in the successful implementation of the scientific work. This is, in fact, a pedagogical experiment, as well as survey methods (written form) and observation.

Educators, teachers, primary school students and parents of children have been involved in the implementation of the program (Khmelnyskyi Inclusive Resource Centre № 1). The children who took part in the experiment were diagnosed with cognitive development disorder of moderate and mild degree.

The method of pedagogical experiment was used during one academic year (2021-2022). This method was used to determine the feasibility of actively introducing the psychological and pedagogical principles of organizing distance education for children with special educational needs in elementary school (assessment of innovations in distance education, the need for adaptive programs and an individual approach by teachers, parents). It was also necessary to establish how effective it is to introduce the psychological and pedagogical principles of adaptation to the new educational environment into the educational process, as well as the means of preparing a primary school student for the realities of modernity. The observation method was auxiliary to the pedagogical experiment. Statistical methods will make it possible to obtain and evaluate the results of the experiment.

The measures described in the academic paper were aimed at reducing stress, anxiety states, stimulating children and parents to personal growth. They were considered in the scientific work from the standpoint of observation. The observation method is empirical;

therefore, the research group was not able to determine the proposed psychological and pedagogical principles as a comprehensive universal program, the basis of systemic changes.

A total of 20 2nd grade children, 32 parents, and 7 teachers were involved in the experiment. The variable in the classroom is the introduction to the approval of the educational program aimed at the active personal development of the child. Everyone agreed to participate in the experiment; the parents signed an additional agreement for permission to children's participation in the cognitive research program. The research group, having received the consent of the administration of the educational institution, signed a memorandum guaranteeing the preservation of privacy and anonymity of all participants.

Stage 1. Preliminary preparation of educational materials and their adaptation to the realities of distance learning was carried out. Monitoring of available technical means and educational technologies available to students, teachers and parents in the conditions of distance education was also carried out. Surveys were also conducted regarding the demographic situation, professional level of parents, living conditions and education of the respondents. The schedule, content and stuffing of additional classes and discussions with students, parent consultations were being formed.

Stage 2. At this stage, in parallel with training, conducting consultations for parents, and the active work of teachers on adapting all participants to the conditions of distance education, monitoring of indicators and learning outcomes prior to using the distance education technology was carried out, the beginning and end of the process of using innovative psychological and pedagogical principles in conditions of distance education. Conversations with parents and consultations with teachers were regularly held.

Stage 3. At the final stage, the level of interest of parents, teachers, and children in the implementation of the program was monitored, involving recording the level of attendance by parents of individual online consultations, the use of psychological tools for the development of the child's personality. The results of parents' attendance at counselling classes were also determined.

Regarding the difficulties that arose during the implementation of psychological and pedagogical innovations, the following ones should be identified, namely: the duration of the program (1 initial year); along with this, the research group did not have the opportunity to determine the reasons for the ratings given by the respondents; it is not possible to conduct qualitative in-depth research.

5. Results

The psychological and pedagogical principles of the organization of distance education for children with the intellectual development delay provide for the application of psychological means of influence, therapeutic and preventive measures, the presence

and constant use of specialized educational materials and tools, thanks to which it will be possible to reduce stress, anxiety and depressive states arising during the transition to distance forms of education in the conditions of the pandemic.

The psychological and pedagogical tools used in the framework of distance education include as follows: an individual and comprehensive approach to the student in the circle of his communicators; learning and using innovative technologies, creating an individual schedule for each family, choosing the most necessary technologies; provision of technical means necessary for online education; psychological readiness of parents and teachers to use innovations; ongoing therapy activities and adaptation to online activities and training; formation of individual programs; acmeological technologies, etc.

In the process of preparation and implementation of such a program, researchers had to understand the level of living conditions, employment, family status, age of the respondents; these are such factors that can significantly affect the quality of learning in the distance education system.

Table 1.

Demographic, professional, household characteristics of respondents (author's development)

Nº	Parameters	Respondents
1	Age of children	
	8	18
	9	2
2	Gender of children	
	Male	12
	Female	8
3	Flat	
	1 room	6
	2 rooms	10
	3 rooms	4
	House	1
4	Performance level	
	Low	6
	Medium	11
5	High	3
	Education of the mother	
6	Secondary, special	10
	Higher	21
7.	Employment	
	Unemployed	0
	Housewife	15
	Employed	16
7.	Mother's work/family balance	
	Difficulty	26
	There are no difficulties	5

As it can be observed from the table, the vast majority of participants in the educational process experience difficulties in maintaining a work / family balance, forasmuch as work has been transferred to home in the conditions of the pandemic. Parents have to work and take care of the child at the same time. This has required an individual approach, development of flexible training schedules, treatment, and counselling. Preparation of individual meetings, as well as training records, which could be reviewed as many times as needed at a convenient time.

At the second stage, changes were measured in the pattern of respondents' perception of learning at the beginning of the use of distance learning technology and at the end of training. The first survey was conducted at the beginning of the academic year, and the final one at the end of the academic year. The results are presented in percentages.

Table 2.

Changes in the learning process prior to using the distance education technology and at the final stage of its using (author's development)

№	Conditions	Group At the beginning	Group Final
1	Concentration of attention		
	yes	35%	46%
	no	75%	54%
2	Breaks		
	every 15 min.	76%	58%
	30 min.	20%	38%
	45 min.	4%	4%
3	Autonomy of the child	45%	62%
4	Quick fatigue	87%	80%
5	Attention captured by the video	65%	73%
6	Time for distance online learning		
	4 hours		
	6 hours	28%	26%
	12 hours	62%	66%
		10%	8%
7	Use of the Internet	89%	98%

According to the results of the survey, it is obvious that distance education requires the use of modern digital technologies; the condition for successful overcoming problems is the availability of the Internet. The number of participants of the program using the Internet increased by 9% after its completion. By the end of the work, the concentration of attention improved by 11%; the child's autonomy increased by 17%; the number of students who needed a break every 15 minutes decreased (19% less). This testifies to the adaptation of 46% of respondents to the realities of online distance learning.

Along with this, at this stage, a detailed survey was conducted regarding changes in the respondents' behaviour and symptoms.

Table 3.

Changes in the behaviour and symptoms of the respondents at the beginning and at the final stage of distance learning implementation (author's development)

Nº	Parameters	Group (beginning of the experiment)	Group (end of experiment)
1	Lack of perseverance	87%	80%
2	Aggressiveness	47%	34%
3	Anxiety	84%	78%
4	Behavioural lability	65%	63%
5	Rhythm of sleep		
	Normal	14%	42%
	Got worse	86%	58%

As can be observed from the results in the table, children had the biggest problems with rhythm of sleep: at the beginning, it accounted for 86% of deteriorations, but in the process of participating in the experiment, the number of sleep disorders decreased by 28%. Reducing the negative impact of the destruction of the usual lifestyle as one of the fundamentals of a child's stability, decreasing anxiety and aggressiveness, indicate the need for changes in the rhythm, system and educational approaches in distance learning, and especially in the conditions of working with primary school-aged children with cognitive development disorder.

Final stage. At this stage, a survey was introduced regarding the evaluation by the participants of the experiment on the effectiveness of using a set of psychological and pedagogical tools for adaptation and implementation of distance learning.

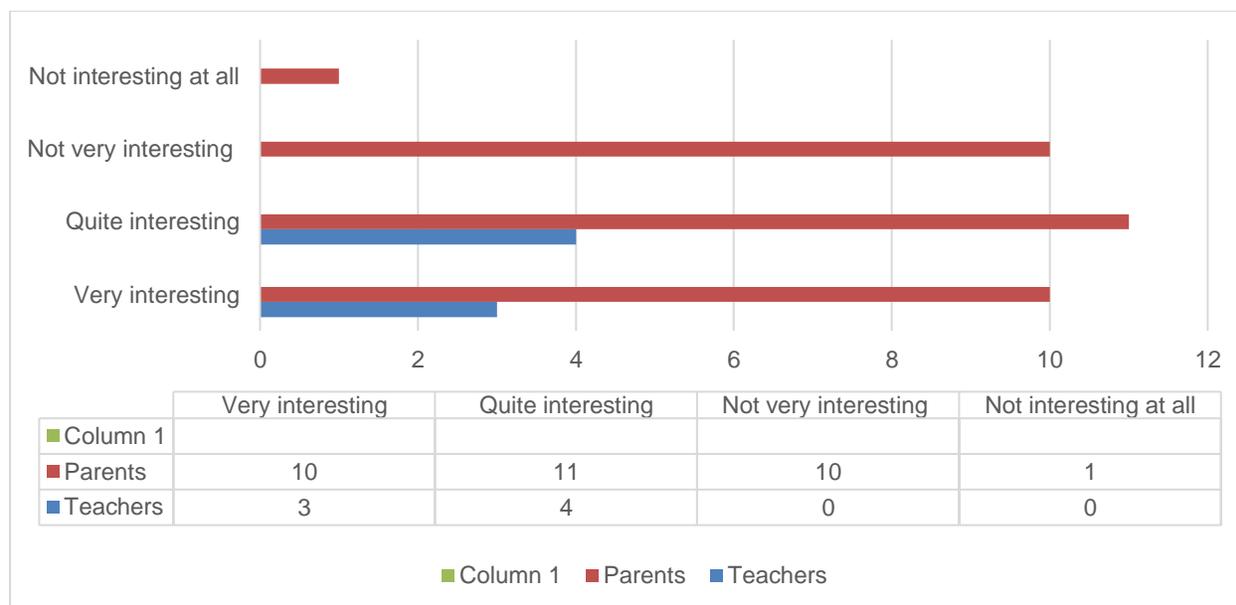


Figure 1. Graphic representation of the interest level of participants (students, teachers, parents) in the work of the program (author's development)

As the result of the diagram have shown, the involvement of a complex of psychological and pedagogical means of distance education organizations was quite positively assessed by teachers (all 7 respondents have rated the program as interesting). From among the respondents who found the program not interesting at all, 1 person, and 10 parents found it not very interesting. However, the vast majority of parents (21 people) were inclined towards the introduction of active forms of adaptation of the whole family to the conditions of distance education.

At this stage, a study of the frequency of attendance organized for parents as part of the educational program was also conducted.

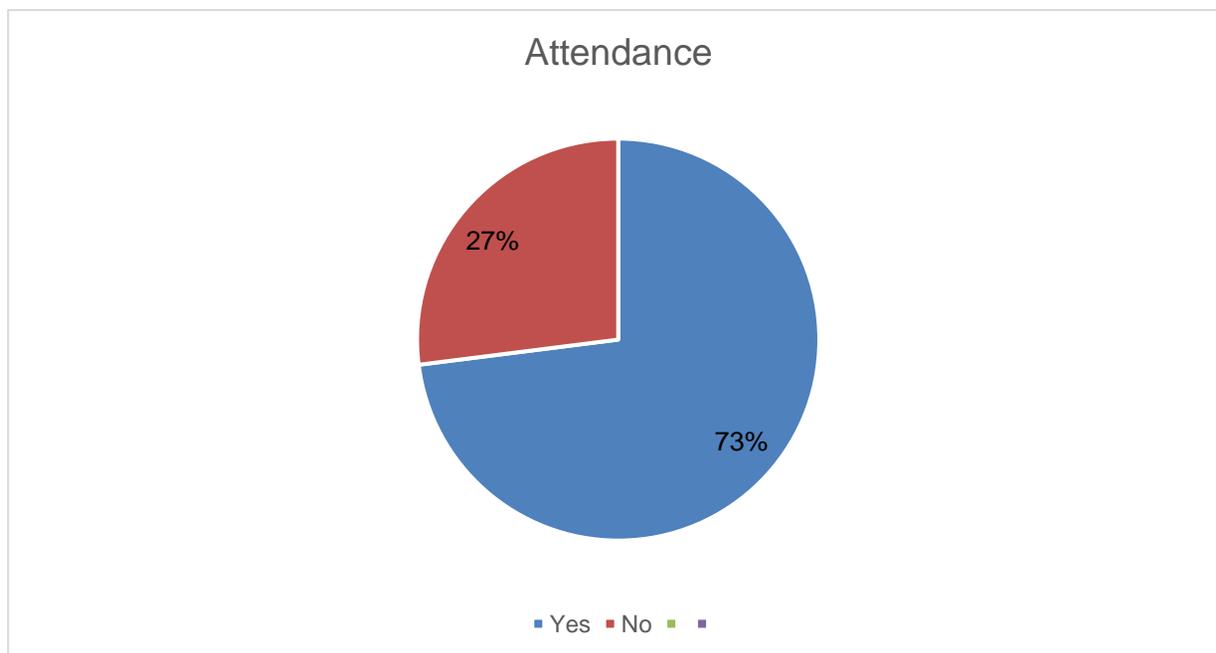


Figure 2. Graphical description of the attendance of individual online consultations by parents (author's development)

The high level of attendance of classes by parents (73%) shows the motivation of parents to acquire skills for working with a child, which requires intensive attention, especially in rapidly changing conditions. It should be noted that in the course of the research, the respondents' interest in applying the potential of the psychological and pedagogical arsenal of tools in primary school in conditions of pandemic restrictions has been revealed.

6. Discussion

The issue of inclusive education, especially its problematic nature in the context of pandemic restrictions of modern pedagogy, has broad prospects and is determined by thematic diversity. In the investigation (Tessarollo et al., 2022) dedicated to the diagnosis of behavioural changes in children with ADHD in online learning conditions, it has been

established that concentration of attention, spontaneous mood changes, autonomy in distance learning are more limited, especially in the group of children with ADHD. Behavioural changes were present in all groups; they accounted for 64,2%; mainly restlessness, aggressiveness and anxiety have been noted. Compared to the control group, children with ADHD had worse results by 21,7%. In our research, a high level of anxiety was also determined; at the end of the experiment it was 78%, aggressiveness - 34% and anxiety - 78%. However, it should be noted that in the process of applying a complex of psychological and pedagogical tools, this tendency decreased by a total of 9%. Accordingly, it will be necessary to assess the consequences of the quarantine in the future and plan a set of actions for recovery.

A number of studies also have established a tendency to reveal numerous emotional and behavioural symptoms of anxiety, depression, PTSD, in adults and children receiving education under quarantine restrictions, as well as the appearance of mental discomfort, in general (Bonati et al., 2021). As our research shows, the presence of anxiety states connected with a sudden and essentially forced change in the learning rhythm is a great challenge for adults and a significant test for children with intellectual disabilities. The primary students had problems with the rhythm of sleep; however, during the application of a complex of psychological and pedagogical measures, the number of sleep disorders decreased by 28%, and the negative impact on the child's lifestyle also decreased. This indicates the need for changes in the rhythm, system and educational approaches in distance learning when working with children with cognitive development disorder.

An important component of modern pedagogical programs is the practice of professional counselling in an educational institution. Hainagiu S. (2020) considered the counselling program, which was introduced as a mandatory part of the educational process. According to the results of the study, attendance at such consultations was 99% of the 95 participants of the experiment. Moreover, 74% of respondents noted this program as an interesting one. In the research presented by us, the attendance by parents of students obtaining education under the studied program was 86%. This indicates the need to continue experimental investigations in order to search for effective forms of learning in the conditions of distance education.

7. Conclusion

Participants of the educational program (parents and teachers), which provided for the use of a complex of psychological and pedagogical principles of distance education for primary school-aged children with cognitive development disorder, showed a high degree of satisfaction with the proposed measures for the comprehensive adaptation of children and parents to the realities of distance education (68% of respondents identified the activities as interesting ones). Parents expressed their approval towards the practice of attending individual consultations and joint classes with the child (83%).

In the course of the application of the complex approach, children gradually adapted to new conditions. The level of aggressiveness and anxiety decreased, the sleep rhythm partially recovered. These results indicate the need for parents and educators to be aware of a comprehensive approach to the use of pedagogical and psychological tools supporting the stability of primary school-aged children with cognitive development disorder. The introduction of such training programs should occupy a worthy place in the field of school education.

In the prospect, when planning the setting up of schools for offline education, it is worth considering possible pandemic restrictions that may last several months and be ready to use the acquired experience of distance education. Along with this, it is also necessary to continue to develop educational programs designed to facilitate the processes of adaptation to new forms and technologies of learning for children with cognitive development disorder and their parents.

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