

Distance learning as a means of forming subjective attitude in physically challenged children

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Abstract: The article analyzes the results of a research aimed at identification of the pedagogical technology promoting the formation of a subjective attitude in children with disabilities / physically challenged children studying remotely. Key words: physically challenged children, e-learning, informational and educational environment, subjective attitude.

1 Introduction (Section 1)

The issue of teaching children with disabilities and physically challenged children is very relevant in modern society. According to the Federal Register for People with Disabilities, there are 688,787 children with disabilities aged 0 to 18 in Russia as of January 2023 (<https://sfri.ru/analitika/chislennost/chislennost-detei?territory=1>). Every year, more than 1.5 million children apply to psychological, medical and pedagogical boards to register or cancel registration as a physically disabled child (<https://pmpkrf.ru/>). By the Order No. 436N as of June 30, 2016, the Ministry of Healthcare of the Russian Federation approved a list of diseases which allow the children to study the basic educational program remotely (<https://ppt-ru.turbopages.org/s/ppt.ru/docs/prikaz/minzdrav/n-436n-82676>). Distance learning and computer technology allow to organize the educational process for children with disabilities / physically challenged children at home, offsetting the shortfalls in their personal development, education, social engagement associated with the disease and inability to go to school. Distance learning resources and properly established conditions promote the forming of subjective attitude in children with disabilities.

2 Literature review and research methods

Schools accommodating for children with special educational needs and allowing them to study remotely are available in many countries. For example, e-learning has been practiced in the United States of America since 1995. Currently, there are public schools with e-learning technology available in 44 states [1-5] In China, there was only one such school back in 1996, while in 2011, the number of such schools skyrocketed to 200 [6-10]. International community has confirmed the positive impact of e-learning activities in Canada, Great Britain, Finland, Denmark, Mexico, Germany, Eastern European and Latin

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American countries (L. Thompson, R. Ferdig, E. Black, 2012), (El-Baz, Nasser, 2021). As part of its monitoring of special and mass educational organizations in modern scientific web resources (dated October-December 2022), the Institute of Special Needs Education of the Russian Academy of Education has identified 9,365 Russian educational organizations with established conditions for distance learning activities with the use of computer technology and Internet (<https://ikp-rao.ru/files-and-media/viewing-files?&fl=481&k=1579949326>).

International studies have confirmed the effectiveness of the schools that practice distance learning and positive results of children who study remotely [11-23].

Accumulation of academic skills is not the main goal of teaching children with disabilities. Instead, its main goal is to develop the skills of social engagement, try things out and experience different life situations and bolster the ability to live independently. In the era of digitalization, children spend a lot of time on the Internet. We won't touch on the issues of mandatory content filtering-it is mandatory, but only in the lesson. When the school day ends and the child has a tablet of parents in his hands, he becomes a "resident of the virtual world" - a user of social networks. For children with disabilities with musculoskeletal disorders, the Internet is really a means of communication and a real window into the world. It is a well-known fact that due to excessive parental protection and forgiveness of teachers, children with disabilities often keep to the position of dependants. Helping such children is a crucial point when it comes to developing subjective attitude which would manifest in their ability to make decisions and take responsibility for the implementation of such decisions, to analyze their own activities, to do self-reflection and to contemplate the outside world; ability to self-identification and self-fulfillment. It is important that children with disabilities should learn at school how to be aware of their goals and how to set them. They get to independently evaluate their abilities, learn how to develop critical thinking in relation to themselves and to those around them. It's fundamental to establish such conditions at school for children to be able to develop independency, proactiveness, initiative and personal interest in achieving the positive results (Bayborodova, 2020).

Developed subjective attitude is the backbone that will help children browsing through the Internet distinguish good from bad, extremist content from normal content, motivate them to opt for a healthy lifestyle instead of joining so called "groups of death" which spread propaganda of drug abuse and crimes, which provide children with access to violent scenes and drive them to suicide.

It's essential for a child to be successful in his/her educational activities, but it's also vital to help him/her find the activities which will help realize his/her potential, make the right decision regarding the future career, find his/her place in society, become a competitive and highly-demanded professional. To make all this possible, children with disabilities should be taught to make right and adequate decisions.

The objective of this research is to identify the pedagogical technology of organization of educational process promoting the forming of subjective attitude in the children with disabilities and/or physically challenged children, who study remotely. The following methods have been chosen to facilitate the achievement of the said objective:

- Theoretical, such as review of literature, Internet resources, and regulatory documents, analysis of students' educational outcomes, systematization and summarization of the obtained data; generalization of experience of an educational organization

- Empirical, such as observation of students' development, polling, conversations with teachers and parents, analysis of work experience of organizations in different regions.

The research has been developed in the following way:

1. Preparatory work. We have studied the Internet resources, both Russian and foreign scientific literature in order to identify the characteristics of organization of teaching of children with disabilities and/or physically challenged children remotely; regulatory documents, specifying the organization of education for physically challenged children. We have studied the experience of distance learning of children with disabilities in Moscow Oblast, Ivanovo Oblast, Vladimir Oblast. We have also developed criteria and indicators for studying a child's subjective attitude.

2. Diagnostic stage. We have studied the work of the state general education institution of Yaroslavl Oblast named Help Center for Children, in which a structural subdivision named School of Remote Learning was established in 2010 and has been functioning since that time. As per the state assignment, each year the school teaches 110 children with disabilities / physically challenged children. Children with various diseases and disabilities are studying in this school in 2019-2020 academic year: 67 students have physical conditions; 25 students have muscle-skeleton disorders; 34 students with developmental delay; 3 students are visually impaired, 2 of which are with developmental delay and 1 is visually challenged and has muscle-skeleton disorder; 1 student is hearing-impaired; and 1 student has muscle- skeleton disorder and developmental delay.

A questionnaire with 43 multiple or single choice questions has been developed to diagnose the level of subjective attitude in children. A survey of 7-11 graders studying remotely but regularly attending additional classes (38 students). The results of 6 students were contradictory and thus removed from the sample. The initial diagnostic assessment identifies a low level of subjective attitude in children with disabilities.

Simultaneously, conversations with 25 teachers having over 5 years of experience in this school and 15 parents whose children had been studying in this school more than 2 years were carried out.

3. Shaping. A focused effort was made to change the informational and educational environment, organization of classes developed on the basis of agency oriented technology and subject-subject relationships between students and teachers.

4. Analytics. Qualitative and quantitative analysis of carried out work and students' learning activity was conducted; the data was systemized.

3 Results

In order to organize a learning process, it's necessary to create an informational and educational environment in which a child studying remotely could have a convenient learning activity. It's stipulated by local school acts that a family of a student should be provided with a set of equipment which includes specialized adapting equipment (keyboard with increased size of keys and a special insert which excludes accidental pressing of neighboring keys, special joysticks, rollers, removable keys, etc.). This equipment allows physically challenged children to be fully functional during the learning process. The school also provides Internet connection of the required quality. Typically, it's mandatory for both the teacher and the student to be present at class. Offline learning is allowed when a child needs to attend therapy sessions. Teachers and students interact via video conference software such as Skype and TeamViewer. Children study individually or in groups of 2-3 people under the same educational program.

The rules of organization of distance learning are established based on the conversations between teachers and parents: students have to prepare for classes, set up their study desk, close the tabs, software and apps they don't need to use during classes, submit homework right after it's completed; turn on video during classes.

Informational and educational environment in the distance learning school (Federal law No. 273-FZ December of 29, 2012) has been established based on a free learning

environment system Moodle (Modular Object- Oriented Dynamic Learning Environment) (<http://cpd.yaroslavl.ru/shdo/>). In the information and educational environment, information blocks have been developed: information for students, school teachers, and school administration. There are also links to log in to the automated information support system for educational process management in the Yaroslavl region. To implement e-learning by subject teachers in the information and educational environment, distance learning courses have been developed for classes and subjects. According to the sanitary and epidemiological requirements for the conditions and organization of training and education in organizations that carry out educational activities on adapted basic General education programs for students with disabilities, at least 5 hours per week of extracurricular activities are provided for the implementation of correctional orientation. To carry out corrective work in the information and educational environment of the distance learning school, corrective courses have been developed, implemented by teachers-defectologists.

Thus, the information and educational environment based on Moodle systematizes the educational process of a distance learning school, is a piggy Bank of didactic materials and a means of informing participants in the educational process. The electronic courses are developed for each class (teachers constantly update the content of courses) and for correctional courses.

The analysis of the learning activity of children with disabilities allows to make a conclusion that the most effective technology of organization of learning activity promoting subjective attitude is subject oriented technology (Bayborodova, 2021). Classes developed as electronic courses allow to provide children with a multitude of tasks and types of activities.

In short form, an online classroom promoting subjective attitude in students contains the stages of a subject oriented technology: self-diagnostics, self-analysis, self-identification, self-fulfillment, self-evaluation, self-affirmation (M. I. Rozhkov, L. V. Bayborodova, 2020), which is shown in Table 1.

Table 1. Stages of distance learning

Stage	Teacher’s activity	Student’s activity	Applied means and software
Preparatory stage	A teacher greets the children. Creates a positive emotional environment.	Talks about relevant personal events; shares new achievements.	Self-reflection. The means applied: videoconnection via Skype, TeamViewer, iChat, OpenMeetings.
Knowledge update	A teacher demonstrates interactive resources (for example, colorful video, infographic) to determine the subject collectively. Suggests determining the subject of the class.	Engages, answers questions. Asks questions. Sets out the subject of the class.	Self-reflection. Video, presentation. The means applied: PowerPoint, Adobe FlashPlayer, Macromedia Flash, Piktochart.
Self-diagnostics	A teacher leads up to independent analysis of homework results. Suggests listing the homework tasks that presented challenges.	Lists the tasks that presented challenges. Comments on mistakes.	Self-reflection. Teacher or student is sharing their screen.

Self-analysis	A teacher asks the students the following questions: What challenges did you face? What were you not able to do? Why were you not able to do it? What do you need to do to complete the complicated task?	Defines a problem: discovers his/her weaknesses.	Self-reflection. Self-analysis Teacher or student is sharing their screen. The means applied: Wordwall.
Goal setting	A teacher suggests determining and writing down the goals of the class based on the results of the homework (identified issues). Discusses the goal and asks questions.	Defines and writes down the goals of the class.	Self-reflection, analysis, independent setting of goals. A shared board is used to write the goals down. The means applied: WebRoom Stoodle Scratchwork, Miro, padlet.
Determination of content and form of student's activity, report form	A teacher suggests choosing a task from those available in the electronic course (or in the active infographic) based on the complexity level, degree of self-sufficiency, as well as the report form.	Chooses one or multiple tasks. When working with a group of students, this stage is determined along with the study mode.	Self-reflection, independent choice of tasks of various complexity. The means applied: E-course sections. Various software. Piktochart Wordwall.
Independent study	A teacher helps solve the issues, if the student faces difficulties.	Studies independently. If needed, assisted by the teacher.	Independent studying. Various software is applied, depending on the task. The means applied: Piktochart, Padlet, Cross.highcat, WordsCloud, LearningApps, Rebus1, Learnis.
Results	A teacher suggests choosing and independently assessing and analyzing the most difficult tasks.	Submits the completed tasks. Identifies the level of complexity of the tasks, identifies issues.	Self-reflection, self-analysis. A student shares his/her screen or sends a screenshot, of a scan of the completed tasks in his/her workbook. The means applied: Skype, TeamViewer.
Self-assessment	A teacher establishes conditions for students' independent assessment of their work. Asks different clarifying questions.	Assesses the results of own work. Agrees or disagrees with the evaluation of own work.	Self-assessment, self-analysis, self-reflection. Automated checking of tasks (if available).
Selection of homework	A teacher offers to choose homework based on work done during the class.	Chooses and backs up the choice of homework.	Self-analysis, self-reflection, goal setting, selection of the level of complexity and the scope of the homework. The means applied: E-course as well as links to external resources, platforms.

It is clearly seen, that it's important to provide the students with an opportunity to define and realize the goal of the upcoming activities, to give an adequate evaluation of their own abilities and initial readiness to study the new material, complete tasks and practical work. A teacher in his/her turn should promote the opportunity to make a conscious choice, independent decision making, encourage proactiveness and develop the

need in self-fulfillment. The electronic course section should be organized in such a way as to make it possible for a student to choose the complexity level, the type of task and the speed of its completion. Besides, any student should have a possibility to return to the class materials at any time. A child moderates the process of studying the subject that the teacher had suggested. By realizing his/her own ability to choose the types of activities himself/herself, a student feels that he/she is responsible for decision making and doesn't simply following the instructions of the teacher.

Self-reflection is a mandatory part of a class, an exercise, task completion, after all other stages have been completed. Students make decisions themselves, based on the results of the work that has been completed, and the relevance of the action plan they had opted for. Students may exercise their individuality by analyzing their own activities and the activities of their classmates. The teacher suggests that students independently evaluate the results of the work that has been completed and choose homework tasks themselves (while the teacher just guides and subtly adjusts their choice for the most optimal result).

When developing a task section in an electronic course, teachers can use all available didactic methods: upload videos, vibrant images, active flash cards and tasks, simulators, etc. Here are some of the most popular software among teachers to apply: PowerPoint, Piktochart, Padlet, Cross.highcat, WordsCloud, LearningApps, Rebus1, Learnis.

The resources available in the Internet allow teachers to create modern didactic materials which students find interesting not only in terms of content but also in terms of form. Almost all services listed above are used for development of tasks for students as well as for both students' own practical and individual work and for organization of their final work.

Formation of subjective attitude depends on the nature of the students' interaction with their teachers. It's important for a teacher to establish subject-subject relationship with a student with disabilities. However, not all teachers demonstrate readiness to take on such work. In this regard, the school of distance learning regularly offers training for the teachers. The distance learning school has an action plan which includes practical workshops, various round tables, and master classes aimed at preparing the teachers to form subjective attitude in students with disabilities who study remotely. Great attention is paid to the psychological aspects of formation of subjective attitude and specifics of work with children with various disabilities. During the onboarding, a new teacher takes an introductory course made of three sections: the first section is aimed at the development of information and communication competencies, the ability to work in the informational and educational environment, and the development of software skills; the second section is aimed at the establishment of a teacher's psychological and pedagogical readiness to work with children with disabilities and physically impaired children; the third section helps teachers get prepared to use subject oriented technology in the educational process.

Formation of subjective attitude in children with disabilities also depends on their relationship with their parents. It's important for teachers to regulate the relationship between children and parents. This is the purpose of establishing a so-called parents' club in the distance learning school. Supervising teachers, methodology specialists and a psychologist closely cooperate with the parents of the children with disabilities. Parents are not just outside observers, they are the direct participants of the educational process. The student's academic curriculum is developed in coordination with his/her parents: they decide which disciplines will be taught offline in a school setting, and which will be taught remotely, using Internet. In the beginning of the academic year, parents along with their children — 9th graders — determine the subject of the final year-end project; starting in the 7th grade the students are provided with career guidance. Both students and their parents choose correctional courses for the students together. A school-wide meeting of the

teachers and parents is organized where a most wide selection of correctional courses is offered, all developed by special education teachers.

Subjective attitude in the children with disabilities who enroll into a distance learning school in most cases almost hasn't been formed. Due to the underlying health problems, children with disabilities are often unsocial, quiet, more willing to just answer questions than to have a proper full- scale conversation. At initial diagnostics, less than 15% of the children with disabilities display examples of self- sufficiency, proactiveness, initiative, and ability to set goals; the majority of such children doesn't have faith in themselves, consider themselves totally dependent on the people around them and unable to act independently.

After half a year of targeted support of the individual learning activity of the children, we could finally observe positive results. Surveying revealed the following results.

Proactiveness, initiative (which are the indicators of the activity-based component of subjective attitude in children) have been formed for this group of children at a middle level:

- 37.5% of students stated that they were always active during classes;
- 62.5% disagreed with the statement that the teacher had thought through all classroom activities in students' place.
- 42% of respondents said that they liked discussing with teachers different topics not related to classwork and tried to connect a bit earlier to use that time to chat.

The indicators of the childrens' responsibility, adequate self- assessment and self-organization were quite high: 87.5% of the children bear the responsibility for their decisions and consequences (primarily to themselves); 87.5% said that correctional courses allowed them to adequately evaluate their knowledge and skills; 87.5% of children said that courses helped them organize their learning process; 75% of children said that in the cases where they got a lower grade, than they wanted to, they thought about the reasons of such a situation and about the steps they would take to improve it next time.

The need to overcome challenges has been formed at a middle level:

- 42% of children noted that they always tried to understand what went wrong and what needs to be done to achieve better results.
- 62.5% said that the classes helped them become more confident in that they are capable of dealing with even quite complicated tasks.
- 37.5% of children said that they liked solving complicated tasks because they felt positive emotions after they cracked them.

Moreover, an increased motivation and interest in learning, along with the development of communication skills and confidence have been observed in children with disabilities.

4 Discussion

It's absolutely obvious that remote education of children with disabilities has significant peculiarities. This peculiarity is predetermined by the fact that the majority of such children is immature, and feels dependant; besides, they have a distorted interpretation of both their own abilities and disabilities (Chernyavskaya, A. P., Shipkova, E. N., Egorova, P. A., 2022). Conversations were conducted with their teachers based on the results of the experiment. It allowed us to identify the challenges that children with disabilities experience during the learning process:

- initially the students with disabilities are not able to set their studying goals themselves; the majority doesn't display neither any activity towards learning nor motivation; they don't demonstrate any independence and show very little commitment;
- due to the developmental specifics, children with disabilities experience

significant difficulties in selecting the types of their own activities, and issues when planning their activity and organizing self-assessment.

The characteristics specified above are considered not barriers in the educational process, but tasks to be resolved for the benefit of a child with disabilities. Naturally, the results of all children will differ, as their abilities differ. However, it is important to mention that forming subjective attitude in children with disabilities is an essential stage in rehabilitation and abilitation of such children.

As a result of the analysis of the activities and measures taken by the distance learning school, surveying and questioning of the students and conversations with their parents we became able to confirm in practice that forming subjective attitude in students with disabilities is a very gradual process which mainly depends on changing the role and attitude of a teacher in the course of forming of subjective attitude in such students (Mosina, Markova, 2022). Moreover, the organization of the process described above compellingly demonstrates the possibility to overcome the communicational barriers that prevent physically challenged students from succeeding in receiving education and social engagement (Boyarinov, 2015).

Both communication in the Internet and modern computer technologies have proven to be effective, especially in those cases when traditional educational technology is not available. The feedback of the teachers who work exclusively remotely using Internet-connection and computer technology as well as the learning outcomes of their students clearly demonstrate the success of such type of educational process.

Subject oriented technology provides certain results when teaching all categories of children. However for children with disabilities in particular, it also carries a valuable pedagogical potential, it helps them to accept themselves, believe in their own abilities and find their own place in the society. It's worth noting that each child has his/her own abilities and their teachers shouldn't raise the bar too high. On the contrary, the flexibility of distance learning allows the participants of the educational process to find balance between the educational needs, desires, and abilities of the children.

Best teaching practices of both children with disabilities and physically challenged children also outline co called "subjectivization (when a teacher and a student are equal right participants of the educational process) as the main methodological principle" (N.A.Alekseyeva, T.G. Golovskaya, E.P. Khamzina, 2016) of the organization of the educational process.

5 Conclusions

As a result of the conducted study we have identified that the subject oriented technology is the most efficient pedagogical technology promoting the formation of subjective attitude in children with disabilities who study remotely. The conditions for implementation of such technology are the establishment of the informational and educational environment, subject-subject attitude of a teacher, regulation of the relationships between children and their parents.

The effective form of an online class is an electronic educational course which provides the students with a most wide range of didactic materials and enables them to choose the types and means of activities which help reveal their subject attitude during the classes. Distance learning resources provide favorable conditions for pedagogical support and create more opportunities for the development of children with disabilities. Classes where subject-oriented technology is applied help form subjective attitude in students considering the motivational and goal setting component, voluntary component, reflexive component, and practical component.

Change of attitude in the adults - parents and teachers is another condition of the

formation of the subjective attitude in children with disabilities. When adults change their attitude, children do the same. Nowadays students no longer need the teacher who is the “carrier” of knowledge. Rather, they need a tutor, a mentor, not the one who conveys information but the one who creates an interesting and funny learning environment and who promotes their independent work. Children with disabilities will be successful and will believe in themselves when their parents allow them to become successful and independent, when their parents stop constantly guarding them and allow them to make decisions and bear responsibility for their own actions.

Students’ mastering electronic courses with the use of subject oriented technology allows organizing universal learning activities and forming their information and communication competencies. Availability of electronic courses shows a great way to develop learning motivation and subjective attitude in students. Developing classes applying the elements of subject-oriented technology (Bayborodova, 2019) promote forming subjective attitude in students which is critical in both children with disabilities and physically challenged children.

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