

# Pedagogical Tools for the Formation of the Subject Position of Students in the Conditions of Distance Learning

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**Abstract**—The article presents an analysis of the results of a study aimed at identifying pedagogical means of forming the subject position of students in conditions of distance learning. The need for the formation of the subject position of students is indicated, which is manifested in the child's ability to make independent decisions and be responsible for their implementation, analyze activities, reflexively relate to their actions and the world around them, in self-determination and self-realization. The study was built using theoretical (analysis of the literature of regulatory documents and Internet sources, analysis of the results of educational activities of students, systematization and generalization of the data obtained) and empirical (conversations with teachers and parents, observation of students, questioning) methods. The authors studied the experience of the regions of the Russian Federation (Yaroslavl Region, Ivanovo Region, Nizhny Novgorod Region, Primorsky Territory) in organizing education for children with medical indications for homeschooling using distance learning technologies. The effectiveness of the use of subject-oriented technology is revealed, the necessary conditions for organizing distance learning are determined. Two groups of pedagogical tools have been tested that contribute to the formation of the subject position of students in distance learning: tools associated with the use of subject-oriented technology and distance learning tools. It is shown how at each stage of subject-oriented technology the corresponding means of distance learning are used.

**Keywords**—*education, distance learning, the subject position of students, subject-oriented technologies*

## I. INTRODUCTION

Digitalization and global technology development are reflected in all spheres of human life. The world is changing, living conditions are changing, including learning conditions. The coronavirus pandemic has approved distance learning in a modern school, the forced testing of which has confirmed its viability and effectiveness. The widespread use of distance learning determines the need to revise didactic principles, both in the content of training and in the organization of the educational process. Modern realities, the pace of life and new

educational technologies show that distance learning has already taken root in the education system [1, 2] and the task of teachers is to build this process, making the most of its educational potential.

Modern learners can easily find information of interest to them in a large flow of information, quickly respond to e-learning. The arsenal of pedagogical tools at the disposal of a teacher working remotely is much wider than with real interaction. Pedagogical means of distance learning, in addition to traditional ones, are supplemented by electronic courses, electronic educational publications, simulators and simulators, audio-video educational materials, software for laboratory work, drawings, practical skills development, etc. A wide range of pedagogical tools allows to satisfy the educational needs of children and special learning needs dictated by individuality and personal educational goals.

The reverse side of the technological revolution is expressed in the oversaturation of the multimedia environment [3]; clip thinking in its negative manifestation leads to a decrease in the ability to analyze information [4]. Spending time in social networks [5] leads to a decrease in the stability of social contacts and increased anxiety of students, which leads to the danger of manifestation of destructive and self-destructive behavior of children. In the educational process of modern schoolchildren, in addition to academic knowledge that is linear and standardized, it is necessary to pay special attention to the value-semantic content that implements the ideas of meta-education [6], ensuring maximum individualization and satisfaction of the educational request of students and parents, contributing to the formation of the subject position of students [7].

The subjective position of students is manifested in the child's ability to make independent decisions and be responsible for their implementation, analyze activities, reflexively relate to their actions and the world around them, in self-determination and self-realization. In the classroom, built on the basis of subject-oriented technology, children learn to understand and set goals for activities, adequate self-

assessment of their capabilities, criticality in relation to themselves and others [8].

In the course of this research, the analysis of pedagogical tools that contribute to the formation of the subject position of students in distance learning was carried out.

Scientists have formulated different definitions of pedagogical tools. In the context of this work, pedagogical means are understood as tools and actions (technologies and methods of organizing classes, forms of educational activities of students, didactic materials and teaching aids and means of interaction between participants in the educational process) that contribute to the achievement of the goals and objectives.

**II. RESEARCH METHODS**

The purpose of this study is to identify pedagogical means of organizing the educational process, built with the use of distance learning technologies that contribute to the formation of the subject position of students.

To achieve the goal, the following research methods have been identified:

- theoretical methods: analysis of the literature of regulatory documents and Internet sources, analysis of the results of educational activities of students, systematization and generalization of the data obtained.
- empirical methods: conversations with teachers and parents, observation of students, questioning.

Study time: January-July 2020.

The study was conducted as follows:

Stage 1: Preparatory work. Were studied the regulations governing the use of distance learning; scientific literature and Internet sources on this topic. The experience of the regions of the Russian Federation (Yaroslavl Region, Ivanovo Region, Nizhny Novgorod Region, Primorskiy Territory) in organizing the education of children with medical indications for homeschooling using distance learning technologies was studied. Based on the analysis of scientific literature and the method of expert assessments, criteria and indicators have been developed for studying the formation of the subject position of students (Table I); a questionnaire has been developed.

TABLE I. CRITERIA AND INDICATORS OF THE SUBJECT POSITION OF STUDENTS

Criterion	Indicators
Motivational and target	Motivation to learn
	Goal setting
Volitional	Self-regulation
	The need to overcome difficulties
Activity	Activity
	Initiative
	Responsibility
Reflective	Self-assessment
	Self-organization

Stage 2: Diagnostic. The work of the State Educational Institution of the Yaroslavl Region “Center for Helping Children” on the organization of home education for children with disabilities using distance learning technologies was studied. A survey of 38 students of grades 7-11 of the distance learning school was carried out, the results of observations of the educational activities of 76 students of the distance learning school were collected. Conversations were held with 36 teachers working remotely from different schools of the Yaroslavl Region, Moscow, and Ivanovo, who have more than 5 years of teaching experience, 20 of whom work at the Distance Learning School constantly (more than 2 years), 16 – worked remotely in the coronavirus pandemic in the spring of 2020. Conversations were held with 63 parents, whose children had experience in distance learning from Yaroslavl and Vladimir Regions, Moscow, Yekaterinburg (43 parents have children who study remotely all the time – due to family circumstances or health reasons; 20 parents of children students using distance learning technologies during the pandemic in spring 2020).

Stage 3: Analytical. The analysis of the results obtained is carried out.

**III. RESULTS**

The study tested two groups of pedagogical tools that contribute to the formation of the subject position of students in distance learning: tools associated with the use of subject-oriented technology and distance learning tools. Let us show how the appropriate distance learning tools are used at each stage of subject-oriented technology.

According to our research, parents and teachers agreed that a convenient informational and educational environment for distance learning has an important role in the formation of skills of self-organization, a responsible attitude to learning, educational initiative. The effectiveness of this pedagogical condition is confirmed by the analysis of the work of distance learning centers for children with disabilities (Yaroslavl and Ivanovo Regions, Nizhny Novgorod).

An analysis of the educational activities of students at a distance learning school, conversations with teachers allow us to conclude that for the formation of a child's subject position in distance learning, the most effective is the use of elements of subject-oriented technology [9]. The construction of training sessions based on this technology allows you to achieve the development of the student's individuality, the ability to learn for the child based on his own interests and personally significant goals, to choose the level of difficulty, the volume of tasks, the nature of the activity. The basis of subject-oriented technology consists in the reflective activity of students, which is stimulated by the teacher's questions. The use of this technology, as exemplified by distance learning, is shown in Table II. Within the framework of the technology, the use of interactive tools, Internet resources and software is considered.

At each stage of the lesson, conditions are created for students to comprehend their actions; while working, they can answer questions that are thought out in advance by the teacher. In distance learning, it is important to have software for video communication and online interaction (Skype, Teams, Teamviewer, Zoom, iChat, OpenMeetings, WebRoom,

etc.), an information and educational environment containing e-courses, which has the ability to monitor the educational results of students, as well as tests and tasks with automatic verification of the result; traditional printed textbook and notebook.

TABLE II. INFORMATION TOOLS FOR THE FORMATION OF THE SUBJECT POSITION OF STUDENTS USING SUBJECT-ORIENTED TECHNOLOGY

Stages	Questions for the child to answer	Distance learning tools
Self-diagnostics	“What do I know?”, “What can I do?”, “What don’t I know?”, “What can’t I do?”	A video clip, presentation (PowerPoint, Adobe flash player, Macromedia Flash, Piktochart, etc.)
Introspection	“What helped me achieve positive results and why?”, “What prevented me from being more successful?”	Screen demonstration by teacher or student (Wordwall, etc.)
Self-determination	“How to achieve a result?”, “What should you strive for and why?”	Stoodle, Twidla, NoteBookCast, Scratchwork, Miro, Padlet, etc.
Self-realization	“What needs to be done to achieve a result?”, “What actions need to be taken to obtain the desired result?”	Piktochart, Padlet, Cross.highcat, WordsCloud, LearningApps, Rebus1, Learnis, electronic trainers, simulators, etc.
Self-esteem	“Did I manage to do the job?”, “What are the reasons for the success?”, “What are the shortcomings and mistakes of the activity?”	Shared boards: Adobe Reader, Paint, etc.
Self-affirmation	“Were the actions and the algorithm for their implementation correct?”, “What needs to be changed to get a better result?”	Links to external resources and platforms

Information and educational environment, electronic courses.  
Tests and assignments with automatic verification of the result.  
Video conferencing and online collaboration software: Skype, Teams, Teamviewer, Zoom, iChat, OpenMeetings, etc.

At the first stage, the child is asked to answer the questions “What do I know?”, “What can I do?”, “What don’t I know?”, “What can’t I do?” which can be asked during the demonstration of a video clip, presentation (PowerPoint, Adobe flash player, Macromedia Flash), interactive infographics (Piktochart, etc.). Under the guidance of the teacher, the students perform self-diagnostics, argue their opinion.

The stage of introspection is organized by questions: “What helped me achieve positive results and why?”, “What prevented me from being more successful?”. It is advisable to analyze the performance of problematic homework or independent work, for which it is necessary to show the screen of a teacher or student, use didactic materials developed using multifunctional tools, for example, Wordwall, etc.

At the stage of self-determination, students predict “How to achieve a result?”, “What should you strive for and why?” – the choice of the content and form of the child’s activity, discussion of the report form is organized. Children choose tasks (or offer their own version) and form of work. To the above resources, which can be applied at this stage, it is necessary to add software tools that allow organizing joint remote work – online public boards Stoodle, Twidla, NoteBookCast, Scratchwork, Miro, Padlet, etc.

At the stage of self-realization, students’ independent work is organized and the results of this work are presented. It is proposed to answer the questions: “What needs to be done to achieve a result?”, “What actions need to be taken to obtain the desired result?”. Activities can be organized by any interactive services and resources, including Piktochart – both active infographics developed by the teacher and the development of notes by students, collaboration in Padlet, as well as didactic materials developed in Cross.highcat, WordsCloud, LearningApps, Rebus1, Learnis, electronic trainers, simulators, interactive lectures, video clips, work with a traditional textbook and notebook, etc.

Self-esteem is stimulated by the questions “Did I manage to do the job?”, “What are the reasons for the success?”, “What are the shortcomings and mistakes of the activity?”. It is advisable to use public boards for discussion and presentation of the results; when doing independent work in a traditional notebook, it is advisable to demonstrate a scanned copy of the work in Adobe Reader or Paint for editing and discussion. Students analyze the results, evaluate their work, explain the mark given.

At the stage of self-affirmation, children analyze “Were the actions and the algorithm for their implementation correct?”, “What needs to be changed to get a better result?”. The definition of homework is organized. It is important to provide a redundant set of options for the choice of the form of work and a meaningful appropriate level of complexity. It is possible to provide links to external resources, platforms or work as part of the continuation of the electronic course.

Thus, during the entire lesson, students are free to set educational tasks and choose ways to solve them. Children are given the opportunity to set goals based on an analysis of the results of homework, choose the form of activity and the level of difficulty of independent work in class. Students analyze and evaluate personal achievements, choose homework options.

Observing the educational activities of the students at the “Center for Helping Children” and conversations with teachers reveal the relationship between the observance of the technological organization of classes, including the observance of constant timing of stages and the educational results of students. Children who are easily oriented in the course of the lesson, having a formed pattern of the duration of one or another activity, can distribute their forces, be more confident in their capabilities and sequence of actions; to experience emotional stability and the need for reflection and manifestation of the subject position.

The pedagogical tools of forming the subject position of students in distance learning should be divided into two groups: tools of subject-oriented technology and tools of distance learning. The pedagogical tools used in distance

learning, built on the basis of subject-oriented technology, are presented in Table III.

TABLE III. PEDAGOGICAL TOOLS USED IN DISTANCE LEARNING

Subject-oriented technology tools	Distance learning tools
Problematic issues, situations of choice, reflection, analysis, goal setting, making independent decisions, reflective nature of the activity	Software for video communication and online interaction, information and educational environment, e-courses, video clips, presentations, electronic simulators, simulators, tests and assignments with automatic verification of the result, quest rooms, services for creating infographics, public boards, services for demonstrating and editing scanned copies of students' work

A questionnaire survey of students of the State Educational Institution of the Yaroslavl Region "Center for Helping Children" who are constantly studying at home using distance educational technologies and monitoring their educational activities revealed the results confirming the effectiveness of these pedagogical tools for the formation of the subject position of students.

When children are enrolled in a distance learning school, their subject position is practically not formed. Due to diseases and frequent treatment, they are withdrawn, taciturn, in the lesson the conversation is built in the form of answers to questions. During the initial diagnosis, only a small number of children demonstrate the ability to set goals, self-regulation, show activity, initiative, self-organization skills. Purposeful support of the educational process yields positive results.

A survey of teachers working in a distance format revealed the necessary conditions for organizing distance learning: software that allows online communication of participants in the educational process via video communication; information and educational environment, the ability to access it by connecting to the Internet, a public board to ensure the possibility of organizing joint activities. The child's ability to use this software is also a prerequisite, but for Generation Z, called digital natives [10], this is not difficult.

#### IV. DISCUSSION

This article substantiates the effectiveness of using subject-oriented technology in the organization of distance learning. It should be noted that the use of this technology is not suitable for all children. U. Sharma, A. Armstrong and others [11], C.R. Jørgensen and J. Allan [12], studying inclusive schools, pay attention to the need for individual approaches to children depending on educational needs. Children with intellectual disabilities, in view of impaired mental operations, do not have the ability to analyze, synthesize, and set goals. Children with mental retardation cannot cope with problematic issues and making independent decisions, but need to perform activities according to a given pattern, are inclined to answer using notes or support. However, teachers note that children with disabilities and children with disabilities with preserved intelligence make great progress in development and learning when building an educational process based on subject-oriented technology. Parents of primary school students (in the course of the study – disabled children with severe speech impairment) note the development of self-confidence, an increase in mood and an improvement in the general

psychological mood of the child after lessons with a reflective nature of activity.

The results of the conducted research detail the research of the Higher School of Economics, which considers the following tools and technologies for distance learning: a website, an electronic diary, a schedule on a website, tasks on a website, e-mail, instant messengers and social networks, paper textbooks, electronic resources, video broadcasts, webinars, cloud services, LMS schools, teachers' own development, lessons on educational platforms, paper notebooks [13]. One cannot but agree that under the conditions of an "extreme transition" to distance learning, the site of an educational organization is the main source of information for students and their parents, but it does not replace the information and educational environment, the presence of which ensures the interaction of participants in the distance educational process.

We agree with L. Tett and G. Macleod [14] that a child's success in the lesson largely depends on the parents. In addition, distance learning requires educators to receive appropriate training in networking and software skills.

Students, when switching to a remote form of interaction with a teacher in the classroom, also undergo training in working in an information and educational environment, handling computer equipment, and forms of online interaction with a teacher. The introduction of new means and forms of education, including distance education, should be considered not only as a factor in improving its quality and efficiency, but as an indicator of the motivational readiness of the population to learn throughout life [15].

The study revealed that the electronic course, as a pedagogical means of forming the subject position of students, is the most effective form of building distance learning. A properly structured course allows you to build an individual learning path based on the existing knowledge base and personally significant learning goals. This conclusion confirms that it is through the information and educational environment that a transition to variability and constant updating of content is possible, reflecting its multiplicity and heterogeneity, providing an opportunity for a rhizome-like approach to the search for knowledge [16].

#### V. CONCLUSION

In the course of the study, we made sure that an effective means of forming the subject position of students is a subject-oriented technology, which can be successfully implemented in the context of distance learning. As a result, pedagogical tools were identified that contribute to the formation of the subject position of students in distance learning. These include pedagogical tools of subject-oriented technology (problematic issues, situations of choice, reflection, analysis, goal-setting, independent decision-making, the reflective nature of activities) and distance learning tools (software for video communication and online interaction, information and educational environment, electronic courses, video clips, presentations, electronic simulators, simulators, tests and assignments with automatic verification of the result, quest rooms, services for creating infographics, public boards, services for demonstrating and editing scanned copies of students' work). Today it is necessary to use technologies that

allow children to make independent decisions and apply modern forms and means of education.

Regardless of the form (traditional or remote) of the organization of the educational process, provided with modern pedagogical means, the teacher has the opportunity to build classes in accordance with the needs and capabilities of the student, based on his educational needs, thereby ensuring the individualization of the educational process, the student's subject position is formed as an integral the result necessary for a safe independent life. The nomadological approach [17], based on the concept of rhizome, implemented in the educational process of distance learning, makes it possible to prepare a person who is able to learn independently, to learn throughout life.

### **Acknowledgment**

The study was carried out with the financial support of the Russian Foundation for Basic Research within the framework of scientific project No 20-313-90037.

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