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Organization of Project Activities During Childhood as a Means of Implementing the Subject-Subject Educational Paradigm in the Context of Digitalization of Education

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ABSTRACT

Currently, the rapid digitalization of public life has a significant impact on the development of modern educational space, which seeks to optimize the educational process using electronic resources. The regulatory documents state that educational organizations of all types and levels should create a modern and secure digital educational environment. Modern teachers use digital tools and software in their activities to improve interaction between all subjects of the educational process. The article describes the features of the implementation of the subject-subject educational paradigm in the education of preschool and primary school children, analyzes the readiness of teachers to form children's active position in education. General approaches to the organization of the educational process that implements the subject-subject interaction of its participants in the conditions of digitalization of education are revealed. The article considers the principles of building a digital educational process during childhood: personalization, flexibility and adaptability, reasonability, multimedia, interactivity. The main stages of forming students' project skills are defined: participation projects, mediated discourse projects, independent network projects. The main software tools for implementing network projects are listed.

Keywords: *digital educational space, subject-subject educational paradigm, preschool children, primary school children, active educational position, project activity, network projects*

1. INTRODUCTION

Modern society is a digital society and this has a significant impact on the system of education - it requires improvement and modernization of educational strategies for students at all levels of education, including the potential of the information space in the educational process. A modern and secure digital educational environment should be created in educational organizations of all types and levels. Works byKolbachev et al. [1], Rosina [2], Glasby [3 , p.14], Witecki et al. and others are devoted to the problem of digital education development in Russia and abroad [4]. The information space is recognized by researchers as one of the innovative learning environments [5].

Features of the organization of educational activities in the modern information educational space are touched upon by many researchers both in Russia (Artemieva et al. [6], Borisenkov et al. [7], Lapenok et al. [8], Utyumova et al. [9],and others) and abroad (Arkoudis et al. [10], Broadbent&Burgess [11] , Glasby [3], Gallagher&Garrett [12], Roberts&Rees [13]).

Another important area of modernization of the Russian education system is the formation of a socio-cultural space: the transition from the Soviet system of education to the European and American ones. Responding to the needs of society that requires competent, free, and constantly evolving personality, since the 90-ies of XX century the principles of process education the principles

of interaction of all participants, students and teachers, have changed, the subject-object educational paradigm has been replaced by the subject-subject one. In contrast to the subject-object educational paradigm, in which the child is an object and the teacher is a subject, the subject-subject paradigm determines that both the child and the adult teaching them are full subjects in the educational process. A.V. Brushlinskiy and A.V. Rubinstein [14] defined the subject as a person who is at the highest level of activity, communication, integrity, autonomy.

The basis of the subject-subject paradigm of the national education system is methodological and theoretical research on the problems of developing education (V. V. Davydov [15], L. V. Zankov [16], D. B. Elkonin [17], and others), personality-oriented education (Sh. Amonashvili [18], Yu. K. Babanskiy [19], I. S. Yakimanskaya [20], and others), on designing the educational process based on the community and equality of all its participants (V. V. Rubtsov [21], G. A. Tsukerman [22], D. B. Elkonin [17], and others).

Despite some differences in the author's position, scientists agree that the teacher becomes the subject of learning - the main value of the educational process, and the main goal of education is to develop the child's abilities based on their individual capabilities and needs. Moreover, the student, that is, the child, determines the knowledge and skills that they plan to master, the teacher should only help in meeting their educational needs. However, the problem is that a pre-school or primary

school child cannot build an adequate request for their education and development, they have not formed educational needs yet.

2. TASK OF THE STUDY

The task of the study is to identify the optimal organizational forms, means and methods of learning during childhood, as well as applied software tools for implementing the subject-subject educational paradigm in the digital educational environment.

3. QUESTIONS OF THE STUDY

In order to solve the problem set in the study, the authors consider it appropriate to consider the following questions:

- to analyze modern forms of education that promote the involvement of children of preschool and primary school age in active educational activities;

- to reveal the aspects of readiness of preschool children and primary school students to implement project activities in the implementation of the subject-subject educational paradigm in the context of digitalization of education;

- to identify the stages of project activity during childhood.

4. PURPOSE OF THE STUDY

The aim of the study is to develop a methodological framework aimed at implementing the subject-subject educational paradigm in kindergarten and primary school in the context of digitalization of education: determining the essence of project activities in the context of distance education, highlighting the principles of building the educational process of preschool and primary school children in a digital educational environment.

5. METHODOLOGY

Research methods: terminological analysis, comparative analysis, synthesis, questionnaires, systematization and generalization.

6. RESULTS

At senior preschool and primary school age, children begin to develop basic skills and algorithms for building their educational activities: acceptance and awareness of the goal of the upcoming activity, planning a sequence of actions aimed at achieving the desired goal, analysis, evaluation of the result. In this context, the main role of the teacher in the learning process is to create such conditions in which the child develops an active position in the process of discovering new knowledge, jointly solving the problem with the teacher, and eliminating the difficulty that has arisen. In other words, the teacher should encourage children to learn about the world around them actively and purposefully, in the process of which the subject receives knowledge and skills, experience of communication and social activity.

In order to determine how much kindergarten teachers and primary school teachers are aware of the importance of forming children's basic learning algorithms, an active position in learning, the development of children's problem vision, critical thinking, and the ability to plan their activities, an open questionnaire was conducted for a group of preschool teachers who took advanced training courses, and primary school teachers - postgraduates of Ural State Pedagogical University. The respondents were asked questions related to understanding the subject-subject educational paradigm: "What is the subject? The subject of educational activity?", "What are the characteristics of the subject of educational activity", "Does the degree of subjectivity (objectivity) in the educational process depend on age? gender identity? individual characteristics?", "Who is more interested in forming the subject's position in education - the student? Teacher? Parent? Administration? Future employer? State? Justify your answer, "Determine the advantages of the subject-subject educational paradigm for the child", "Determine the risk zones of using the subject-subject educational paradigm at preschool and primary school age", "Is the subject's position at education different before the digital era and during the digital era? If "Yes", then how exactly?", "Does distance learning contribute to the formation of the subject or object position of the student? A qualitative analysis of the respondents' responses showed that the majority of teachers in general correctly define the subject of the educational process, identify their main characteristics, such as activity in the educational process, independence of decision-making, choice of educational trajectory, self-regulation, self-assessment and reflection of completed educational activities. When answering the question "What determines the degree of subjectivity in the educational process?", the teachers identified first of all the age of students (according to 46% of the respondents, younger students and preschoolers are less ready for subjectivity, they are not always ready to defend their natural "Why?", they are not able to self-regulate their activities, but a teenager, or a high school student in the process of ontogenesis is more ready for subjectivity), almost all the respondents noted that the individual characteristics of a child affect the degree of subjectivity in learning - which is more true. So V. V. Bulkin [23] in his research noted that the readiness for the subject-subject paradigm depends on the individual characteristics of students, in particular, on national characteristics. The author noted that 50% of the US population are representatives of "individualistic psychotypes", so for them the subject-subject organization of the educational process is justified and relevant. In Russia, 85% of the students who were tested belong to the group of "collectivists", focused on the traditional subject-

object learning system, which is based on the structuring of the study material, its consistent study under the guidance of a teacher. Therefore, changes in the education system are mostly not influenced by the needs of individuals, but are a solution to national problems, a response to changing conditions in the labor and social life of the country.

Answering the question "Who is more interested in forming the subject's position in education?" 42% of the respondents indicated the student, since the formation of their subject's position is directly related to future educational and professional activities. 52% indicated that all participants in the educational process should be interested: the student, the teacher, as well as the parent, the administration, the future employer and the state (everyone wants to see an active, thinking person who can flexibly adapt to the realities of life, capable of self-development). 6% believe that the parent is more interested in this.

Among the undoubted advantages of the subject-subject education paradigm, the teachers noted "the active position of the student", "student motivation in obtaining educational outcomes", "educational effect of the educational process", "accounting of individual psychological characteristics of each student, resulting in educational process is becoming personalized".

To the disadvantages and risks of this paradigm, the respondents attributed "possible unsystematic knowledge and skills obtained by students when choosing an educational trajectory independently", "lack of constant monitoring of the student's educational activities", "possible untimely assistance of a teacher in the event of difficulties in the educational process".

Digitalization of education, according to all the respondents, contributes to the formation of the student's position of the subject. Internet, computer educational programs are a tool for organizing self-educational activities of a person. However, the postgraduates noted that distance learning almost did not affect the formation of their subject's position of the student. The educational process did not change, but this form of training required more self-organization and self-discipline. The postgraduates identified the deferred nature of the teacher's help: if there were questions, there was no one to ask them, which is not always productive. In other words, when organizing a subject-subject educational paradigm, it is not the form that is important, but the ways and methods of organizing the educational process.

Thus, summarizing the results of the study, we note that the implementation of subject-subject education paradigm in the preschool and primary school age is possible if the teacher is to create conditions for active inclusion of the child in the process of achieving educational outcomes through the formation of algorithmic skills by preschoolers (which is discussed in detail in [24, 25, 26] by the authors), while by younger students - universal learning actions. Children must learn to understand the purpose of the upcoming activities, assignments, and by the end of primary school to participate in goal-setting, with the help of the teacher to plan future activities, to split activities into individual steps, to perform these steps in strict sequence, to assess the achievement of the goals, to perform reflection of their activities with the help of the teacher, if necessary, to adjust their activities to achieve results when the problem occurs, and also to participate in discussing the problem, finding solutions. So, the design and construction of the educational process is assigned to the teacher, and its direct implementation should be provided to the student, who is an active subject in the process of interaction and cooperation in creating the product of their activities. The acquisition of knowledge and skills should be carried out in the process of dialogue, exchange of views and mutual responsibility for the free choice of one's position. Monitoring the child's achievements should be carried out on an emotional, reflexive and effective level.

To build a digital educational process during childhood, it is necessary to rely on the principles that were identified based on the analysis of the literature [27]: 1) the principle of personalization, aimed at building an individual educational route for students (with the help of a teacher), free choice of the composition of the study group for performing educational tasks, educational project, etc.; 2) the principle of flexibility and adaptability, taking into account the individual approach in education - method and pace of presentation of educational material, the level and nature of pedagogical support, in particular, the level of difficulty of the tasks imposed, etc.; 3) the principle of appropriateness that requires the use of only digital technology and learning tools that ensure the achievement of the goals of the educational process; 4) the principle of multimedia, i.e. use in educational process of various kinds of "digital" visibility (presentations, infographics, augmented reality, etc.); 5) the principle of interactivity, i.e. cooperative learning and interaction, is concerned with constructing the educational process through active multilateral communication, implemented in various forms between students, teachers and other subjects involved in the educational process.

One of the forms of implementing subject-subject interaction in modern digital education during childhood can be project activity, and the project should not be individual, but collective or group, so, it is advisable to implement network projects. Network projects are a form of project activity that is carried out with the participation of several geographically separated project groups that study a common problem in the use of ICTs [27]. Recently, collective cognitive activity in the form of online projects has been widely used in distance education. Students create interactive newspapers, learn to solve a common problem and be critical of their own and other people's educational experience, share their experience and co-exist together [28].

Design (or project activity) refers to the types of human activity that have a conscious nature. Project activity is related to foreseeing the future, to solving (or putting forward solutions to) any problem. Any project is executed by people and is associated with solving a significant problem for them, has a limited availability of resources,

and is implemented through planning, execution, and management.

Development of any project includes the following stages: problematization (analysis of the real situation with identification of the problem), conceptualization and goal setting, planning of activities, mobilization of necessary resources, actual project implementation, monitoring of project implementation and evaluation of its implementation, achievement of the result and its analysis.

The inclusion of a child in project activities should begin at the preschool level, involving children in research, creative, informational, and other types of projects. However, not every child of preschool age can act as a designer. To do this, they do not have enough knowledge, level of proficiency in methods of activity, abstract thinking, and life experience (in order to select the appropriate resources for project implementation). The child does not conceive a "project" - this role is assumed by adults (parents, teachers). Most often, children are involved in project activities with interest at the stage of preparing project materials and when creating and implementing a presentation of the results of a project shared with their parents. Thus, the child's participation is reduced to one or two stages in this project activity. The child does not plan or implement the project, but performs specific tasks at various stages of the project activity [24]. Despite this, in the process of activity, children gradually master the skills that are basic in project activities necessary for the optimal development of the individual. Therefore, the organization of project activities in kindergarten is a necessary stage in the development of project activities during childhood.

The implementation of project activities in the digital educational environment, the organization of network projects is more concerned with children of primary school age and has a number of specific features, in particular, the gradual formation of students' project skills.

The first stage is participation projects. Network projects organized by the teacher at this stage are aimed at the collective formation of knowledge. During the implementation of these projects, children must master the basic computer programs that allow them to organize network cooperation in the implementation of the project. Children should develop basic project skills: acceptance of the goal of the project activity, awareness of the problem to be solved, planning and analysis of activities. Younger students should be able to assign roles in a group project, interact in collective work, and perform group reflection and analysis of project activities. Although project activities on the web resemble joint actions in real space and time, younger students need to be trained not only in communication activities, but also in how to work together on a project. Therefore, the teacher is the main coordinator of project activities at this stage; the teacher is involved in the distribution of roles, topic selection, resource selection, planning and presentation of the product of project activities.

There are many websites on the Internet for organizing various network projects (for example, http://wiki.iteach.ru, http://letopisi.ru,

http://ru.wikipedia.org etc.). These sites support the concept of Internet development - Web 2.0, the main feature of which is the ability to create content by any user of the network.

To develop materials for a network project, the teacher can use special services: www.anketer.ru (conducting surveys), www.glogster.com (creating multimedia posters with 3D), www.mindmeister.com (development of intelligence maps), http://www.timerime.com (timelines, graphs), etc.

The second stage is mediated discourse projects. The teacher organizes the selection of a project topic that is significant for a group of students through an educational discussion. The teacher coordinates the distribution of roles for the children when working on a network project, transmits educational experience to students through solving problem situations, organizes planning activities for each child in the implementation of project activities. Then the teacher interacts with the project coordinator, tracking the progress of children towards the intended goal, advises them if necessary in online and offline modes, encourages the children to cooperate and move them towards the goal, but the main work on the implementation of project activities is carried out by the students.

When organizing scientific and cognitive activities of a student at this stage, one can use virtual tools to perform both research and creative projects. They can use the "Scratch" programming environment as such a tool (http://scratch.mit.edu). Our choice is based on the following considerations: the simplicity and user-friendliness of the interface allow children to start learning programming as soon as they learn to read, since programs in Scratch are not written, but are assembled using the mouse from ready-made blocks-commands similar to LEGO blocks. Scratch is not only a programming language, but also a good environment for project activities, since everything necessary for such activities is included in its composition: a graphic editor for creating and modifying visual objects; a library of ready-made graphic objects; a library of sounds and musical fragments; a large number of examples.

The third stage is independent network projects. Students choose the project topic, group composition, assign roles for its implementation, complete the project and present the product of the project activity. The teacher creates conditions for creating role-based interaction between the students in project activities, for team achievement of the goal, advises the children, participates in planning activities, gives clear instructions to the participants and monitors the achievement of the goal through the project coordinator. The guarantee of working together in a virtual educational community should be the novelty, feasibility and significance of the project for children.

7. CONCLUSON

Project activities are one of the most popular, interesting and attractive types of educational activities for children.

Implementation of various projects in the context of digitalization of education allows children of preschool and primary school age to develop the ability to plan their activities, split the process of achieving goals into separate steps, distribute roles in the process of working together on a project, negotiate, and present the result of their activities, evaluate their work and the activities of other project participants, provide mutual assistance, and work in a team.

Thus, the organization of project activities during childhood makes it possible to implement the subject-subject educational paradigm by creating conditions for the active inclusion of the child in the process of achieving educational results, forms students'' communication skills, the ability to learn. Participation in project activities in kindergarten and primary school will allow a person to be a full-fledged subject of the educational process in the future, independently building their own educational trajectory.

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