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INTEGRATION OF MOTOR AND COGNITIVE ACTIVITIES OF CHILDREN AT PRESCHOOL AGE

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Abstract

The present article presents the results of the technology of integration of motor and cognitive activities of preschool children. The features of the organization of the health-saving environment in preschool educational institutions aimed at filling the deficit of motor activity of children. The necessity of performing movements in accordance with the abilitis of the structure of all the joints of the musculoskeletal system of preschool children is shown. It is established that the control of motor and cognitive activities of children develops on the basis of the peculiarities of formation of body scheme and the model of motor action focused on stimuli and signals, coming from the external environment, presented as objects of cognition. As the result of the pedagogical experiment, it is established that the technology of integration of motor and cognitive activities of preschool children is possible in all the educational fields of the program. The 5-7-year-old children have improved motor fitness in comparison with the preschoolers from the control group. There is a decrease in the number of diseases (by 43%) in the pedagogical experiment. A significant increase in the cognitive development of the children of the experimental groups is detected.

Keywords: Integration, motor and cognitive activity of children of preschool age.

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1. Introduction

What is integration? Integration of motor and cognitive activity of preschool children is characterized by rapprochement and integration into the whole mutual adaptation and unification of the content of the educational fields of the program of preschool education in achieving internal (value-oriented) unity on the basis of motor activity of the child. At the same time, the authors note ordering, structuring, a high degree of the integrity of software content, stability, the state of harmonic balance, prescribed functioning of various parts of the educational process, a certain degree of its autonomy and efficiency (Pravdov, 2006).

2. Problem Statement

At present, in the pre-school education system there are acute problems associated with mental and physical stress that children experience and deteriorating health (Kislyakov at all, 2017). This is due to a large number of different fields of trainings, both within the framework of the main program of preschool education and in the system of additional education, characterized by reduced physical activity. To fill the deficit of movements of children one can use technology integration of their motor and cognitive activity. The organization of the health-saving environment in the preschool educational organizations on the basis of integration of motor and cognitive activity of children is one of the prior directions of scientific researches relying on a deep theoretical provisions and advanced pedagogical experience.

3. Research Questions

The solution of problems within the educational fields: social and communicative, cognitive, speech, artistic and aesthetic and physical development can be achieved in the process of motor-cognitive activity of the child on the basis of establishing integrative links between them. First of all, this is due to the fact that at the initial stage of psychomotor development of preschool children, the laws of formation of motor and cognitive actions are based on the formation of systemic connections between sensory, motor and mental components. The formation of the components of motor and cognitive activity in children occurs against the background of their development of relatively independent elements. At the same time, the process of mastering movements is transformed at the level of mutual relations, ensuring their interaction and regulation. It is at the stage of preschool childhood when it is possible to integrate the properties and qualities of various components of activity; when their effect is not only summed, but also mutually enhanced (Pravdov, 2006; Kislyakov at all, 2015). The formation of systemic connections between the individual components of both motor and cognitive action (sensory, motor and mental) is conditioned by motor-cognitive task - a model of the future. At the same time, elementary, unrelated to each other, manifestations of motor and mental qualities are replaced by systemic properties.

4. Purpose of the Study

To determine the effectiveness of the technology of integration of motor and cognitive activities in the process of education of preschool children.

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5. Research Methods

The organization of educational activities in preschool institutions within the framework of the program is based on the increase in the volume of motor activity of children in the classroom, relating to all the educational fields of preschool education. When organizing classes, the main emphasis is made on ensuring the conditions under which the child moves in the process of obtaining knowledge and acquires new skills. The technology of integration of motor and cognitive activity is based on the use of a wide range of sports equipment and training devices equipped with didactic material and manuals, including the use of information and communication tools. According to the standard of preschool education, cognitive development aims "...at the formation of cognitive actions, development of imagination and creativity... and ideas about themselves, other people, the objects of the surrounding world, the properties and relations of objects in the world (form, color, size, material, sound, rhythm, pace, amount, number, part and whole, space and time, motion and rest, cause and effect, etc.)... the formation of primary notions of homeland and the Fatherland and ideas about social and cultural values of our people, about national traditions and holidays, the planet Earth as a common home of people, peculiarities of its nature and diversity of countries and peoples in the world" (Order, 2017). In this regard, the motor actions of the children during the lessons are as a means for solving cognitive tasks. The most important condition is the change of static poses and movements and movement in space. The nature, type and form of movements are different, but it is known to children. Motor activity in the course of lessons should not "interfere" children to gain knowledge. Indicators, by which the tutor can determine and dose motor intensity in the classroom, are the degree of attention of children, fatigue, absent-mindedness and loss of interest.

The volume of occupations carried out on the basis of integration of motor and cognitive activity can make 25% - 30% of their total amount. Of course, that the motor activity of the child during the lessons the tutor needs to be correctly interwoven in the cognitive activity of preschool children. Integration of motor and cognitive activity of children in the classroom is based on game situations. For example, spinning on the disk "Health", the child is invited to name the animals painted on the cards located around the disk. In this case, didactic material serves as a reference point for children in space and the goal that it should achieve in the process of performing a motor action. One of the most rational forms of implementation of the technology of integration of motor and cognitive activity is the obstacle course. It includes: running, jumping, climbing, climbing, climbing, walking on a limited support, throwing and throwing the ball at the target, motor actions from sports games, as well as tasks aimed at the development of children's attention, imagination, etc. For example, children are encouraged to go through an obstacle course, using any, even the most unusual, action that will allow them to overcome obstacles quickly and effectively. At the same time, the child is invited to remember the image (or take a picture), for example, only with a drawn fruit from among the proposed selection of didactic pictures at each stage. The content of educational material used in physical exercises is similar to the tasks of the content of other educational areas and it is broadcast throughout the day in all forms and types of continuous educational activities of children. Both motor and cognitive actions in the framework of integrated technology is largely due to the degree of motor readiness and mental development of each child. In this regard, the volume, the number of combinations of motor-cognitive tasks, their complexity depends not only on the age of children, but also on the creativity of kindergarten teachers.

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6. Findings

As the result of the pedagogical experiment, it was established that the technology of integration of motor and cognitive activity of preschool children allowed to increase the degree of development of physical qualities and formation of motor skills. At the end of the pedagogical experiment, the significant superiority in the children of the experimental groups in all the tests of physical readiness ($p \leq 0,05$) was recorded (table.1).

Table 01. The results of testing for physical training of children aged 5-7 years old at the end of the pedagogical experiment

Motor tests		CG **(29 persons)**	EG **(31 persons)**
1. Running snake (s)		12,6±0,6	10,2±0,4
2. Shuttle run 3x10 (s)		11,8±0,8	9,9±0,45
3. Jump from place (sm)		105,3±5,2	117,6±5,8
4. Throwing (m) hand	Right hand	5,65±0,2	7,45±0,3
	Left hand	4,46±0,2	6,85±0,3
5. Carpal dynamometry (kg)	Right hand	8,45±0,4	8,86±0,4
	Left hand	7,3±0,3	8,3±0,4
6. Static equilibrium (s)	Right leg	23,5±1,1	31,7±1,5
	Left leg	21,5±0,9	24,3±1,2
7. Dynamic equilibrium (s)		9,2±0,4	6,2±0,2
8. Response to moving object (ms)		5,4±0,2	3,5±0,1

It was established that in the process of the implementation of technology of integration of motor and cognitive activity in the presence of complex motor-cognitive stimuli, contributing to the development of the child's movements, the formation of motor skills associated with the manifestation of abilities for coordination was faster. It was also found that the development of children's movements was faster when the child use the entire musculoskeletal system to solve the motor problems, performs them in different planes and positions of body in space with the use of reference touch points, presented in the form of didactic signs and symbols.

The evaluation of cognitive development of children who participated in the experiment was carried out according to the methodology proposed by V.V.Utemov and P. M. Gorev (Utemov at al., 2016) and adapted to assess the performance of motor-cognitive operations of children in the course of three complex tasks (table.2).

Table 02. The results of the assessment of motor and cognitive development of children 5-7 years ($p \leq 0,05$)

Motor-cognitive tests	**KG**	**EG**
1. Obstacle course (20 m - 10 motor obstacles) with a choice of options for movements and memorizing signs and symbols during the execution of motor tasks	32,7±0,3	25,4±0,2
Number of child-memorized signs	5,4±1,1	8,7±1,3

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2. Carrying 4 small cubes (0,5*0,5*0,5 m) at a distance 10 m and collecting a large cube (1*1*1m) in accordance with a specified sample memory for a time	39,9±2,4	28,8±1,6
3.Performing 7-motor tasks 3 times (on the cards jumping up, tilting the torso, throws and catching the ball) in the order of the preliminary logical distribution of the child himself pictures of heroes of the fairy tale 1.Turnip, 2.Grandfather, 3.Grandma, 4.Dog, 5.Cat, 6.Mouse	36,9±2,4	27,8±0,2

Experimental technology has improved the effectiveness of cognitive development of children. A significant difference has been recorded for all the tests. The positive influence of the system of sports and recreational work on the incidence of ill children is detected: decrease by 43% in the process of pedagogical experiment.

7. Conclusion

Thus, the positive dynamics of the indicators of motor and cognitive development in children aged 5-7 years old as well as reduction in the number of diseases in the children of the experimental groups confirm the effectiveness of the introduction of the technology of integration of motor and cognitive activity in the system of preschool education

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