DYNAMICS OF INTELLIGENCE AND MOTIVATION OF PRIMARY SCHOOLCHILDREN IN THE PROCESS OF A FORMATIVE EXPERIMENT

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Abstract

The progress of society in recent years has not bypassed the educational environment. The problem of personal development of the primary generation is increasingly being discussed in psychological and pedagogical communities. Excessive requirements for schoolchildren do not always correspond to their age-related psychological characteristics, because the modern school curriculum requires schoolchildren to carry out large intellectual loads. The problem of educating personal qualities in primary schoolchildren that contribute to successful schooling remains relevant. Therefore, it is important that when attending school, children are psychologically ready for new social conditions, schooling.

The article presents the results of a psychological experiment with primary schoolchildren. The study focuses on the polymodality of perception as an important aspect of the educational and cognitive process, the driving factor of which is the intelligence and motivation of schoolchildren.

The practical value of the study lies in the fact that by purposefully developing perception (auditory and visual channels) through interaction with the kinesthetic modality, it is possible to increase the overall level of intelligence and motivation of primary schoolchildren.

Keywords and phrases: primary schoolchild, formative experiment, movable games, motivation, intelligence.

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Համառոտագիր

Վերջին տարիների հասարակության առաջխաղացումը չի շրջանցել նաև ուսումնական ոլորտը: Հոգաբանա-մանկավարժական համայնքներում ավելի հաճախ է քննարկվում աճող սերնդի անձնային զարգացման խնդիրը: Դպրոցականների հանդեպ չափազանց բարձր պահանջները ոչ միշտ են համապատասխանում նրանց տարիքային հոգեբանական առանձնահատկություններին, քանի որ ժամանակակից դպրոցական ծրագիրը մեծ ինտելեկտուալ բեռնվածություն է պահանջում դպրոցականներից: Արդի խնդիր է մնում կրտսեր դպրոցականների հաջող ուսումնառությանը նպաստող անձնային որակների դաստիարակությունը: Ուստի, կարևոր է, որպեսզի դպրոց ընդունվելիս երեխաները հոգեբանորեն պատրաստ լինեն նոր սոցիալական պայմաններին, դպրոցական ուսումնառությանը:

Հոդվածում ներկայացված են կրտսեր դպրոցականների հետ անցկացրած գիտափորձի արդյունքները: Հետազոտության մեջ շեշտադրվում է ընկալման մոդալականությունը որպես ուսումնական ճանաչողական գործընթացի կարևոր տեսանկյուն, որի շարժիչ ուժերն են հանդիսանում սովորողների ինտելեկտն ու մոտիվացիան:

Հետազոտության կիրառական արժեքը կայանում է նրանում, որ նպատակաուղղված զարգացնելով ընկալումը (աուդիալ և վիզուալ ուղիները) կինեսթետիկ մոդալականության վրա ազդելու միջոցով, կարելի է բարձրացնել կրտսեր դպրոցականների ինտելեկտի և մոտիվացիայի ընդհանուր մակարդակը:

Բանալի բառեր և բառակապակցություններ՝ կրտսեր դպրոցական, ձևավորող գիտափորձ, շարժախաղեր, մոտիվացիա, ինտելեկտ:

ДИНАМИКА ИНТЕЛЛЕКТА И МОТИВАЦИИ МЛАДШИХ ШКОЛЬНИКОВ В ПРОЦЕССЕ ФОРМИРУЮЩЕГО ЭКСПЕРИМЕНТА

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Аннотация

Прогресс общества в последние годы не обошёл стороной образовательную среду. В психолого-педагогических сообществах всё чаще обсуждается проблема личностного развития подрастающего поколения. Завышенные требования к школьникам не всегда соответствуют их возрастным психологическим особенностям, т. к. современная школьная программа требует от учащихся больших интеллектуальных нагрузок. Проблема воспитания у младших школьников личностных качеств, способствующих успешному школьному обучению, остаётся актуальной. Поэтому важно, чтобы при поступлении в школу дети были психологически готовы к новым социальным условиям, школьному обучению.

В статье представлены результаты психологического эксперимента с младшими школьниками. В исследовании акцентируется полимодальность восприятия как важный аспект учебно-познавательного процесса, движущим фактором которого являются интеллект и мотивация учащихся.

Практическая ценность исследования заключается в том, что целенаправленно развивая восприятие (аудиальный и визуальный каналы) посредством взаимодействия с кинестетической модальностью, можно повысить общий уровень интеллекта и мотивации младших школьников.

Ключевые слова и словосочетания: младший школьник, формирующий эксперимент, подвижные игры, мотивация, интеллект.

Introduction

New school programs present requirements on primary schoolchildren, often unbearable for children 5-6 years old. Mental processes at this age are not sufficiently developed for school education, because they are in the stage of active formation (attention, memory, perception). This is associated with additional stress on the child's psyche, and entails educational and cognitive problems **[22, 23]**. Therefore, when entering school, it is important that the child is psychologically prepared for school. Psychological readiness for school acts as a unified system, the work of which is conditioned by a high level of motivation, intellectual and personal components **[1, 8, 9, 18].**

The intellectual component refers to the general characteristics of a child's thinking-the development of cognitive processes and speech, intellectual skills that are significant for educational activities, and the breadth of the range of ideas. A primary schoolchild should have developed visual and imaginative thinking, formed conceptual operations and

the ability to accept an educational task, turning it into an activity goal. Therefore, an important criterion for the mental development of primary schoolchildren is intellectual development **[2, 3, 4, 12, 14, 20]**. Mental development is closely related to intelligence: when attending school, a child should be able to perform such intellectual operations as comparison, generalization, analysis, classification, etc.

Individual readiness for school is usually understood as a motivational sphere **[1, 18].** The indicator of individual readiness is the inner position of the schoolchild, her desire to learn. The motivation of a first grader has nothing to do with the content of educational activities. A child should want to know, be able, and not strive to go to school just because they will buy school bag for her **[11].** Educational activity should be motivated by adequate motives: these may be the motives of their own growth, improvement. Precisely, the motivation of teaching gives meaning to learning activities. Therefore, the formation of educational and cognitive motives is the most important task of elementary education, and the success of further education depends on the degree of their development. Thus, the motivation and mental development of primary schoolchildren contribute to an increase in the level of learning in elementary school.

Representatives of various scientific fields wrote that the game plays an important role in the harmonious development of a child. The game takes the form of acclimatization a primary schoolchild's lesson, so it is necessary to motivate the child: first with game, and then with educational activities **[7].** At the beginning of school education, the child is guided solely by play motivation, which continues to be the main activity throughout the entire education in elementary school **[15].**

"An immobile child does not learn!" **[19, p. 105].** A. L. Sirotyuk came to this conclusion by studying the works of I. P. Pavlov. The great physiologist believed that any thought ends with movement, therefore, when thinking, many people walk or jerk their legs, move small objects in their hands, etc. A primary schoolchild has a natural need for physical activity, which he realizes in physical education lessons.

There are several main groups of games – creative, sports and movable **[17].** The most favorable of them for elementary school age are outdoor games. They have a positive effect not only on the development of physical qualities of children, but also contribute to the development of mental processes and formations, and, consequently, to the successful assimilation of the school curriculum **[11].**

Theoretical and methodological basis

As a result of the analysis of scientific literature, we **hypothesized** that the use of outdoor and didactic games in the process of physical education classes contributes to the increase of intelligence and motivation of primary schoolchildren.

The **purpose** of our study was to find the dynamics of intelligence and motivation of primary schoolchildren in the process of a formative experiment. One of the tasks we set was the development of intelligence and the formation of educational motivation of primary schoolchildren through a combination of movable and didactic games.

The **methodological basis of our research** was the following theoretical provisions: the teachings on the ontogenetic development of L. S. Vygotsky, the hypothesis about the leading type of activity of A. N. Leontiev, K. D. Ushynsky's pedagogical ideas about systematic learning, P. F. Lesgaft's scientific system of physical education.

The following methods were used in the study: analysis of scientific literature, testing, formative experiment, quantitative and qualitative data analysis.

The research was carried out in several stages:
Stage I – pilot experiment,
Stage II – psychodiagnostics,
Stage III – a formative experiment,
Stage IV – retesting.

A year after the pilot experiment (2014), in autumn 2015, we conducted a psychodiagnostic. As a result, 2 experimental and 2 control groups were formed. The total number of participants in the experiment was 106 schoolchildren.

- 2 experimental groups – 55 schoolchildren:
  - 1st grade – 29 schoolchildren (1-E),
  - 2nd grade – 26 schoolchildren (2-E);
- 2 control groups – 51 schoolchildren:
  - 3rd grade – 25 schoolchildren (3-C),
  - 4th grade – 26 schoolchildren (4-C).

Further, we compiled a program of a formative experiment and conducted physical education lessons according to this program in experimental classes for 5 months **[16].** The control groups did not participate in the formative experiment. Initially, 100 schoolchildren (29 first graders and 71 second graders) took part in the formative experiment, but in order to avoid a large spread of data, in order to obtain reliable results, we left only one 2nd grade - consisting of 26 schoolchildren.

For the experiment, the movable games "The Third extra", "Day and Night", "Calling numbers", "Orientation by ear", "Freeze in a pose", "To your flags", etc. were selected **[21].**

The logical conclusion of our study was the retesting of all participants in the experiment in May 2016.

For psychodiagnostics, we have chosen projective methodology. They are most convenient to use with primary schoolchildren, since it is possible to work simultaneously with a large number of schoolchildren. In addition, children really like to draw, which allowed us to conduct an experiment without taking them away from their favorite activity. We conducted psychodiagnostics using the following methodologies:

1. Goodinough-Harris's projective test "Draw a man",
2. N. G. Luskanova's projective technique "What I like at school".

To determine the level of intelligence of primary schoolchildren, we chose the Goodinough-Harris's "Draw a man" test. In the methodology, children are invited to draw a person without additional explanations. The standardized test was first proposed by F. L. Goodinough in 1926 for the study of cognitive abilities, and in 1963 a new standardization of the method was carried out by her schoolchild D. Harris [5, 6]. The methodology presents normative numbers for each age: for first graders – 18-25 points, for second graders – 20-26, in the third grade – 22-27 points, and in the fourth – 23-28 points.

To assess the level of school motivation, we chose the methodology "What I like about school". The methodology was created in 1985 by N. G. Luskanova as a way to assess the level of school motivation, as well as the dynamics of school adaptation in primary schoolchildren by analyzing their drawings **[13].** According to the methodology, children are invited to draw everything they like at school. This projective drawing reveals the attitude of children to school and their motivational readiness to learn **[10].** The

methodology is considered as a criterion of psychological readiness for school **[8].** And this primarily implies the presence of educational-cognitive motives.

School motivation is assessed as follows:

1. low level of motivation – is estimated at 10 points if there are game plots,
2. external motivation – is estimated at 20 points if non-educational situations are depicted, for example, a school building or a canteen,
3. high level of motivation – is estimated at 30 points if the educational process, educational materials, teacher at the blackboard, etc. are depicted.

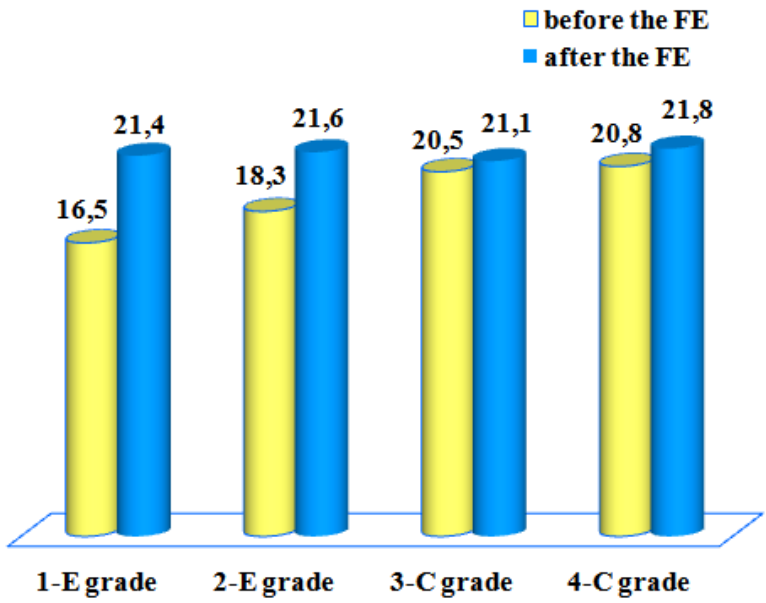
Main results

The results of quantitative analysis of the received data.

The diagrams show the results of psychodiagnostics (stage II) and retesting (stage IV). Accordingly, these are the stages of research before the formative experiment (before the FE) and after the formative experiment (after the FE).

The average intelligence indicators of primary schoolchildren are shown in Diagram 1. Before the formative experiment, we see a natural increase in intellectual development: 1-E grade – 16.5; 2-E grade - 18.3; 3-C grade – 20.5; 4-C grade – 20.8 points. From 1st to 4th grade, the intelligence of a primary schoolchildren develops gradually, without leaps. However, these indicators are below the age norm. This means that the primary schoolchildren participating in this study lag behind in intellectual development throughout their elementary school education.

Diagram 1. Average indicators of intelligence of primary schoolchildren.



After the formative experiment (at the end of the school year), the results change. In the 3-C group, the average intelligence score is 21.1, and in the 4-C group - 21.8 points. As you can see, the average indicator has increased in comparison with the previous stage of the study, while remaining a level below the average.

The results of the experimental groups are encouraging. If before the formative experiment the average indicator was below average, then after the FE it is within the

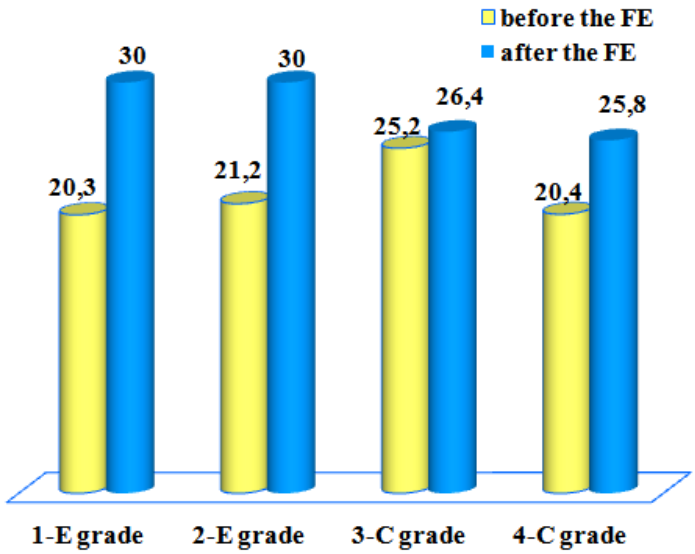
normal range: 1st group – 21.4, 2nd group - 21.6 points. Consequently, after FE, the average intelligence score in the experimental groups increased.

Next, let's look at the indicator of motivation of primary schoolchildren (Diagram 2). Prior to the formative experiment, the level of educational motivation of primary schoolchildren in all groups was above average: 1-E grade - 20.3; 2-E grade – 21.2; 3-C grade - 25.2; 4-C grade – 20.4 points. From the 1st to the 3rd grade, the indicator gradually increases, but in the 4th grade it decreases, approaching the average level.

In the 3 class group, the indicators are quite high, but in the 4-C class group, schoolchildren are less motivated in the middle of the school year, scoring 20.4 points than at the end - 25.8 points. Such a leap can be explained by confidence in their knowledge, preparation for final exams and the transition to a new educational level.

In the experimental groups, we see that in groups 1-E and 2-E, the indicator is on the border between external and educational motivation. Here, some of the schoolchildren depicted game plots or non-educational situations (school building, canteen). For first-graders, this is natural, because they are still "getting accustomed ", adapting to school. In the 2-E grade – such an indicator gives reason to think about the general development of schoolchildren and, perhaps, the insufficiently effective organization of the educational process. After the FE, the indicators reach a maximum value of 30 points. At this stage of the experiment, the drawings were dominated by images of the teacher at the blackboard, educational material, lesson, etc.

Diagram 2. Average indicators of motivation of primary schoolchildren.



Consequently, the formative lesson-experiment helped to increase the motivation of primary schoolchildren.

Conclusions

Based on the theoretical analysis of scientific literature, we have studied the importance of classes for the development of intellectual abilities and the formation of motivational readiness of primary schoolchildren for the successful organization of the

educational process in elementary school. As a result, we organized and conducted a formative experiment that contributed to the development of mental processes that play a leading role in learning.

Based on an experimental study, we have identified the dynamics of intellectual and motivational indicators, before and after the formative experiment. As a driving factor, we used sensitivity to learning at elementary school age, especially at the beginning of education.

In the 1st and 2nd grades, children are most sensitive to targeted learning technologies used in physical education classes. By developing the perception of primary schoolchildren, using movable and didactic games, we helped to increase the average intelligence and motivation of primary schoolchildren in terms of their individual adaptation mechanisms for learning at school.

Thus, our hypothesis that the use of movable and didactic games in the process of physical education classes contributes to the increase of intelligence and motivation of primary schoolchildren has been fully confirmed.

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