

Preschool Child Development in the Organized Information Space

Desarrollo infantil preescolar en un espacio de información organizada

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ABSTRACT:

The main objective of the study was to examine the influence of the curriculum on preschool children's intellectual development in the organized information space. The sample was based on 600 older preschool children: 300 of them joined the experimental group, and another 300 children formed the control group. L. A. Yasyukov's diagnostic Method of Defining School Readiness, Torrance Tests of Creative Thinking and Student's t-test formed the methodological basis for the current study. The authors' program to develop preschool children's personality in the information space was aimed at addressing the following issues: development of motivation; formation of cognitive needs and of incentives to achievement and self-assertion; effective numeracy, writing and readings skills; development of advanced psychological functions, such as thinking, memory and attention; formation of preschoolers' arbitrary mental processes; individual approach to children in the learning process; emotional development or, in other words, formation of the necessary skills to control one's feelings and emotions and to overcome excessive anxiety. The study confirmed the effectiveness of the activities undertaken during the implementation of the program to develop

RESUMEN:

El objetivo principal del estudio fue examinar la influencia del currículo sobre el desarrollo intelectual de los niños preescolares en el espacio de información organizado. La muestra se basó en 600 niños preescolares más antiguos: 300 de ellos se unieron al grupo experimental, y otros 300 niños formaron el grupo control. El método de diagnóstico de L. a. Yasyukov de definir la preparación de la escuela, las pruebas de Torrance del pensamiento creativo y la prueba t del estudiante formaron la base metodológica para el estudio actual. El programa de autores para desarrollar la personalidad de los niños en edad preescolar en el espacio de información tenía como objetivo abordar las siguientes cuestiones: desarrollo de la motivación; formación de necesidades cognitivas y de incentivos al logro y a la autoafirmación; destrezas efectivas de aritmética, escritura y lectura; desarrollo de funciones psicológicas avanzadas, tales como el pensamiento, la memoria y la atención; formación de los procesos mentales arbitrarios de los preescolares; enfoque individual de los niños en el proceso de aprendizaje; desarrollo emocional o, en otras palabras, la formación de las habilidades necesarias para controlar los sentimientos y las emociones y para

preschool children's personality in the information space: indicators for the children's memory, thinking and speech development have improved, as well as their communicative competence, emotional intellect and creativity.

Keywords: intellectual sphere, preschoolers, information space, school readiness, personal development, memory, thinking, speech, communicative competence, emotional intellect, creativity, program.

superar la ansiedad excesiva. El estudio confirmó la efectividad de las actividades emprendidas durante la implementación del programa para desarrollar la personalidad de los niños preescolares en el espacio de información: los indicadores para la memoria de los niños, el pensamiento y el desarrollo del habla han mejorado, así como su competencia comunicativa, intelecto emocional y creatividad.

Palabras clave: esfera intelectual, preescolar, espacio informativo, preparación escolar, desarrollo personal, memoria, pensamiento, oratoria, competencia comunicativa, intelecto emocional, creatividad, programa.

1. Introduction

Our analysis of the well-known innovative approaches (Fassin, 2000; Fischer, 2001; Hull, 2000; Meyer, 2002; Mustonen-Ollila Lyytinen, 2003) to personal development and our own conclusions regarding specific aspects of readiness for innovative activities (Dolgova V. I., Kutepova N. G., Kapitanets E. G., Kryzhanovskaya N. V. and Melnik E. V., 2017; Dolgova, V. I., Mamylna, N. V., Belousova, N. A., Melnik, E. V. and Arkayeva, N. I., 2016; Dolgova, V. I., Baryshnikova, E. V. Dolgova, V. I., Baryshnikova, E. V., Kapitanets, E. G., Popova, E. V. and Rokitskaya, Yu. A., 2016; Dolgova, V. I., Vasilenko, E. A., Kapitanets, E. G., Kondratieva, O. A. and Zhakupova, Ya. T., 2017; Zhakupova, Ya. T., Dolgova, V. I., Kryzhanovskaya, N. V., Kondratieva, O. A. and Kapitanets E. G., 2017) led us to adopt a positive attitude as to the possibilities of the goal-oriented formation of a person's intellectual sphere. Our examination of studies on the formation of the children's information competence and their readiness for the educational and cognitive interaction in the information space of the knowledge to be acquired in school pointed to some general conclusions (Grigoryeva, and Shatalova, 2016; Guryev 2016; Yevseyeva, 2016; Zakharova, 2012; Karatayeva, and Krezhevskikh, 2016; Lokalova, and Nikonova, 2011; Poklonskaya, 2016; Tkachyuk, 2015; Tupichkina, 2009; Yafayeva, 2011).

During class, children should be encouraged to find information on their own, and teachers should stimulate their interest in challenging situations and in critical discussions of this or that information or *modus operandi*. By introducing children to information processing, the teacher helps them arrive at the conclusion that man not only perceives, but also processes information through intellectual activity by thinking and reflecting on it. Games for developing intellectual abilities provide children with the possibility to demonstrate their skills in analyzing, comparing and classifying information. Children's real-life experience enables them to find examples of tools and technical means helping people to process information.

Significant attention is also given to shaping another way of treating information, namely, acting according to the rules and/or algorithms by respecting the sequencing of actions and operations and by highlighting the algorithm's importance in people's daily lives. Task-oriented games and assignments train children to act according to algorithms and to produce some basic algorithms of various life situations.

While implementing these targeted programs, teachers should focus children's attention on the fact that new information may result from information processing. Children are provided with basic information regarding people involved in the creation of new information, and games are a means to try their hand in creating new images fostering their creativity.

The above is the successful combination of the pedagogical and psychological approaches to the development of the modern preschooler's intellectual sphere.

2. Methods

The control experiment consisted of four stages: 1) direct experimental research of the preschoolers' psychological characteristics; 2) processing of the data obtained; 3) comparative

analysis of the extent to which the preschoolers' intellectual sphere has been shaped at the stage of diagnosing and control experiments; 4) comparative analysis of the extent to which the examined characteristics of the preschoolers from the control group have been shaped at the stage of diagnosing and control experiments.

The sample was based on 600 older preschool children: 300 of them joined the experimental group, and another 300 children formed the control group.

L. A. Yasyukov's diagnostic Method of Defining School Readiness, Torrance Tests of Creative Thinking and Student's t-test formed the methodological basis for the current study.

The program, entitled *In the World of Information*, focused on the targeted development of the preschoolers' personality as part of the following activities: 1) perception of educational information; 2) video screenings; 3) listening to audio materials; 4) work with a typing tutor; 5) work with a graphic editor; 6) independent computer game activities; and 7) joint computer game activities.

The development of the children's intellectual sphere was expected to result in increased perception of real-life objects and phenomena, in the development of their attention, memory and other types of thinking (visual, figurative and logical), in the improved locomotor and visual coordination and creativity. Table 1 shows the detailed information.

Table 1. Development of the preschoolers' intellectual sphere within the framework of the *In the World of Information* program

| Type of activity | Spheres to be developed |
|---|---|
| Perception of educational information from teachers | Perception of real-life objects and phenomena, attention, memory, logical thinking, capacity for cooperation, team work and compliance with rules |
| Video screenings | Perception of real-life objects and phenomena, attention, memory, emotional responsiveness, detection of emotions |
| Listening to audio materials | Perception of real-life objects and phenomena, attention, figurative thinking, emotional responsiveness, detection of emotions |
| Work with a typing tutor | Attention, memory, visual thinking, locomotor and visual coordination, creativity, self-control, compliance with rules, sense of purpose |
| Work with a graphic editor | Attention, visual and figurative thinking, locomotor and visual coordination, creativity, self-control, compliance with rules, sense of purpose |
| Independent computer game activities | Visual and logical thinking, locomotor and visual coordination, self-control, compliance with rules, sense of purpose |
| Joint computer game activities | Visual and logical thinking, locomotor and visual coordination, capacity for cooperation and teamwork. Initiative, adequate communication skills, compliance with language behavior rules, emotional responsiveness, detection of emotions, self-control, compliance with rules, sense of purpose |

Children's achievements were recorded and changes in their intellectual sphere were analyzed throughout the duration of the program. Another diagnosis of children's psychological

3. Results and Discussion

The results obtained from the Method of Defining School Readiness, a diagnostic package developed by L. A. Yasyukov, showed that, at the control experiment stage in the experimental group, 3% of children had low performance, 40% had moderate performance, 37% had good performance and 20% had high performance in terms of information processing speed; 8% of preschoolers had good performance, 30% had average performance, 40% had good performance and 22% had high performance in terms of attention; 3% of test subjects had low performance, 30% had average performance, 41% had good performance and 26% had high performance in terms of visual and motor coordination.

5% of preschoolers had low performance, 37% had average performance, 35% had good performance and 23% had high performance in terms of short-term speech memory; 3% of children had low performance, 40% had average performance, 34% had good performance and 23% had high performance in terms of short-term visual memory; 8% of children showed low performance, 30% showed average performance, 40% showed good performance and 22% showed high performance in terms of speech development.

3% of preschoolers had low performance, 30% had average performance, 44% had good performance and 23% had high performance in terms of visual thinking; 10% of test subjects showed low performance, 32% showed average and good performance, respectively, and 26% showed high performance in terms of intuitive conceptual thinking; 3% of test subjects had low performance, 40% had average performance, 34% had good performance and 23% had high performance in terms of logical conceptual thinking.

8% of preschoolers had low performance, 30% had average performance, 43% had good performance and 19% had high performance in terms of speech conceptual thinking; 3% of children had low performance, 30% had average performance, 41% had good performance and 26% had high performance in terms of figurative conceptual thinking; 5% of test subjects showed low performance, 37% showed average performance, 32% showed good performance and 26% showed high performance in terms of abstract thinking.

The results from Torrance Tests of Creative Thinking revealed that, 3% of preschoolers in the experimental group had low performance, 26% had performance slightly below the norm, 40% had average performance, 23% had performance slightly above the norm, 8% had performance above the norm; 7% of test subjects in the control group had performance below the norm, 34% had performance slightly below the norm, 30% had normal performance, 25% had performance slightly above the norm and 4% had performance above the norm.

Further analysis indicated that preschoolers in the experimental group at the stage of diagnosing and control experiments showed significant differences according to the following criteria: information processing speed ($t = -5,4701$), attention ($t = -5,7649$), visual and motor coordination ($t = -6,1182$), short-term speech memory ($t = -4,6912$), short-term visual memory ($t = -5,2358$), speech development ($t = -5,1488$), visual thinking ($t = -6,9984$), intuitive conceptual thinking ($t = -3,6969$), logical conceptual thinking ($t = -4,6160$), speech conceptual thinking ($t = -6,0093$), figurative conceptual thinking ($t = -6,7580$), abstract thinking ($t = -3,9149$), children's sociometric status ($t = -3,0955$), children's rate of satisfaction with their relationships ($t = -3,2899$), image of the peers ($t = -4,3392$), nature of interpersonal relationships ($t = -5,6153$), capacity for coherence ($t = -5,5065$), responsiveness towards peers ($t = -3,9532$), specificities in relationships with peers ($t = -8,0826$), attitude towards leadership ($t = -4,2558$), autonomy ($t = -4,4141$), behavior in case of rejection ($t = -4,6392$), activity in communication ($t = -2,9777$), behavior with adults ($t = -3,7107$), initiative ($t = -3,9821$), predominant incentive to communication ($t = -2,7043$), diversity in incentives to communication ($t = -4,5407$), emotional attitude to the child on the part of his or her peers ($t = -2,1311$), nature of communication ($t = -9,1478$), pro-social actions ($t = 9,1304$),

selectivity in terms of communication ($t = 15,2689$), emotional intellect ($t = -2,3185$) and creativity ($t = -3,2287$). All of the above indicates that the actions undertaken within the framework of the program to develop preschoolers in the information space have proved to be successful: criteria related to children's memory, thinking and speech development have improved, and there has been an increase in their communicative competence and emotional intellect and creativity.

Table 2 shows the results comparing the intellectual, communicative and emotional spheres of the preschoolers from the control group at the stage of diagnosing and control experiments based on Student's t-criterion.

Table 2
Comparative analysis of the specificities of the intellectual sphere of the preschoolers from the control group at the stage of diagnosing ("before") and control ("after") experiments

| Criteria | Mean value | | t-test | p | Deviation | | F-dispersion variable | P dispersion |
|-------------------------------|------------|----------|---------|----------|-----------|----------|-----------------------|--------------|
| | before | after | | | before | after | | |
| Information processing speed | 3,430000 | 3,470000 | -0,4923 | 0,622712 | 1,014164 | 0,975845 | 1,080076 | 0,505821 |
| Attention | 3,440000 | 3,470000 | -0,3729 | 0,709376 | 0,984699 | 0,986074 | 1,002794 | 0,980772 |
| Visual and motor coordination | 3,510000 | 3,560000 | -0,5450 | 0,585933 | 1,101792 | 1,144888 | 1,079759 | 0,507444 |
| Short-term speech memory | 3,380000 | 3,430000 | -0,6174 | 0,537175 | 0,989375 | 0,994180 | 1,009738 | 0,933285 |
| Short-term visual memory | 3,540000 | 3,580000 | -0,5138 | 0,607563 | 0,975485 | 0,930854 | 1,098194 | 0,418515 |
| Speech development | 3,380000 | 3,430000 | -0,5651 | 0,572211 | 1,057984 | 1,108692 | 1,098153 | 0,418697 |
| Visual thinking | 3,490000 | 3,490000 | 0,0000 | 1,000000 | 1,026358 | 1,026358 | 1,000000 | 1,000000 |
| Intuitive conceptual thinking | 3,510000 | 3,560000 | -0,6150 | 0,538785 | 0,996600 | 0,994836 | 1,003548 | 0,975590 |
| Logical conceptual thinking | 3,540000 | 3,590000 | -0,5688 | 0,569695 | 1,054565 | 1,098144 | 1,084356 | 0,484234 |
| Speech conceptual | 3,310000 | 3,340000 | -0,3785 | 0,705188 | 0,968000 | 0,973426 | 1,011243 | 0,923058 |

| | | | | | | | | |
|--------------------------------|----------|----------|---------|----------|----------|----------|----------|----------|
| thinking | | | | | | | | |
| Figurative conceptual thinking | 3,510000 | 3,540000 | -0,3531 | 0,724136 | 1,026358 | 1,054565 | 1,055720 | 0,639514 |
| Abstract thinking | 3,500000 | 3,500000 | 0,0000 | 1,000000 | 1,074172 | 1,074172 | 1,000000 | 1,000000 |
| Creativity | 3,810000 | 3,850000 | -0,5043 | 0,614264 | 0,936388 | 1,005420 | 1,152878 | 0,219290 |

Our analysis revealed that no significant differences have been found in the preschoolers' intellectual sphere at the stage of diagnosing and control experiments. As a result, it can be argued that the improved indicators for all of the above-mentioned criteria are directly related to the implementation of the program to develop the preschoolers' personality in information space.

4. Conclusion

The program under discussion aimed at personality development in information space is based on the acknowledgement of the major role of the informational component in the structure of the person's basic competencies and acts as an important feature of the modern preschooler's personality. This is due, first of all, to the child's needs, because the modern preschooler's life is filled with various information tools and gadgets. Secondly, it is due to the immediate development zone and upcoming school education (modern school children are expected to have basic experience in dealing with information, to be able to discuss, to draw conclusions and to be willing to participate in the learning process).

The study revealed significant differences in all intellectual criteria among preschoolers from the experimental and control groups. Consequently, 25% of preschoolers had low performance, 40% had average performance and 35% had high performance in terms of personal intellectual development at the stage of the diagnosing experiment, whereas the ratio has considerably changed at the stage of the control experiment, with 28% of preschoolers having average-to-low performance, 32% having average performance and 40% having high performance. This shows the effectiveness of the activities undertaken as part of the program to develop the preschool children's personality in the information space: indicators for the children's memory, thinking and speech development have improved, as well as their communicative competence, emotional intellect and creativity.

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