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Anthropology of pedagogues' preparation for the development of cognitive regulation in children by the criterion of IPL

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Abstract

The subject of the research is identification of the anthropological components of pedagogues' preparation for development of the cognitive regulation in senior pre-schoolers by the criterion of IPL (interphrase link) in the speech of children and nursery school teachers. The goal of the research is to identify the anthropological components of pre-school teachers' preparation for development of the cognitive regulation of pre-schoolers by the criterion of IPL. The methodology of the research is based on thought theory (Piaget, 1932), speech activity (Leontiev, 1976), typology of texts (Werlich, 1975), rhetoric influence of texts (Williams, 1983), mechanisms of coherent speech (Zhinkin, 1998). The results of the research are the anthropological components of pre-school teachers' preparation for development of the cognitive regulation of senior pre-schoolers by the criterion of IPL. The anthropological components include: interphrase, cognitive-communicative, physical, mental (associational-imaginal) components. As a result it has been concluded that play activity of pre-schoolers was deployed according to the following scheme: 1) recitation of a poem and watching an illustration (actualization of associative-imaginal flow); 2) highlighting the key words of IPL; 3) performing physical actions shown in the picture; 4) pronunciation and synchronous performance of the pictured physical actions; 5) reproduction of mental (associative-imaginal) content, communicative and physical actions from memory. Evaluation of the above-mentioned exercises at nursery schools of Kazan has shown the positive result as to the mastery level of IPL in children and kindergarten teachers. Moreover, it has had a significant influence on the development of regulatory functions of behaviour in senior pre-schoolers.

Keywords: anthropology, preparation of pedagogues, cognitive regulation of learners, criterion of IPL, senior pre-schoolers.

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Introduction

Preparation of pedagogues of pre-school institutions for the development of cognitive regulation in senior pre-schoolers is one of the essential problems of theory and methodology of vocational education and anthropology of pedagogues' preparation for the development of cognitive regulation in pre-schoolers. Presently scholars actively examine «hot» и «cold» regulatory functions of children's behaviour. (Gray, 1994; Gerstadt, Hong, & Diamond, 1994; Gioia, Isquith, & Guy, 2001; Savina, 2015; Veraksa & Dyachenko, 2015).

However, the cognitive significance of verbal expression of a certain meaning by senior pre-schoolers and methodological ways of organization of their mental activity leading to correct or incorrect interpretation of the meaning are neglected.

Pre-school teachers are often not able to explain the reasons for children's incomprehension of an utterance or erroneous phrasing, and are not able to organize work on the construction of the correct interphrase link (IPL) in speech. It is most obviously expressed in incorrect IPL in the speech of children and pedagogues themselves. This results in non-observance of regulatory functions of senior pre-schoolers.

So far current university syllabuses and academic programmes do not provide for the list of professional competences necessary for organization of work on development of cognitive abilities in children at preschool institutions. The work is related to correct phrasing as well as organizing the mental activity of adequate interpretation of an utterance or speech behaviour.

The analysis of pre-school education practice shows that mistakes related to phrasing, and interpretation of a meaning lead to incorrect mental activity, disorientation of «hot» и «cold» regulatory functions of behaviour.

Literature Review

Anthropology of pedagogues' preparation for the development of cognitive regulation in senior pre-schoolers cannot be revealed without referring to psychological, linguistic, psycho-linguistic, methodological research.

In psychological studies, the problems of cognitive regulation, coordination of “hot” and “cold” regulatory functions of behavior are widely reflected (Bower, 1981; Endler & Parker, 1994; Kochanska, 1996; Kochanska, Murray & Coy, 1997; Kagan, Snidman & Arcus, 1998; Kochanska, Murray & Harlan, 2000; Rothbart, Ahadi, Hershey, & Fisher, 2001; Kochanska, Coy & Murray, 2001; Jones, Rothbart & Posner,

2003; Khomskaya, 2002; Yusupov, 2009; Pisareva & Gritsenko, 2011). Studies have shown that the cognitive regulation of senior pre-schoolers should be supported by physical exercise.

In psycholinguistics (Piaget, 1932; Nosenko, 1975; Novikov, 1983; Petrenko, 1997), the special role of the IPL in the processes of understanding, memorizing, reproducing, communicative behavior, in the processes of cognitive regulation of behavior has long been substantiated. However, mental (associational-imaginal) characteristics of integration of children's cognitive and physical activity remain undeveloped.

The IPL theory and practice in modern linguistics and psycho-linguistics is widely covered (Sevbo, 1969; Halliday & Hasan, 1976; Dijk, 1980; Halperin, 1981; Dridze, 1984; Vater, 2001; Filippov, 2007; Novikov, 2007; Chernyavskaya, 2009), in the methodology of speech development (Kapinos, 1994; Sidorova & Savelyev, 2002; Mikhalskaya, 1996; Lvov, 2000). In pre-school educational practice, the data of text linguistics and psycholinguistics are used only partially (Halliday, 1974; Cannella, 2005; Grawley & Eacott, 2006; Gabdulchakov, 2011; Gabdulchakov, 2014).

An analysis of these studies shows that IPL is the most important characteristic of text integrity, coherent speech, and effective communication. Identification of IPL allows to understand the text, comprehend its content, correctly interpret it or retell. However, in the practice of pre-school education, the IPL is practically not used either in the process of forming representations (artistic-aesthetic, mathematical, environmental, moral), or in the process of developing children's speech.

The use of IPL in the teacher's speech allows to make speech coherent, understandable, communicatively oriented. Such a speech is an important condition for effective communication with children.

The use of IPL in the speech of children of pre-school age allows them to streamline their mental activity, coordinate the "hot" and "cold" regulatory functions of behavior.

However, if the speech of kindergarten teachers is not a role model, then the speech of children develops as incoherent and not entirely understandable. Such speech can develop along the lines of sound culture, enrichment of vocabulary, grammatical structure, etc., but at the same time remain incoherent and negatively affect the cognitive regulation of behavior.

When preparing teachers for the use of IPL in pre-school educational practice, it is necessary to take into account that IPL is generally distinguished by the presence of:

- lexical repetition (repetition of words);
- chain, parallel or mixed communication;
- key (semantic) clue.

The lexical repetition consists in repeating the same words (usually nouns or root words). A variety of lexical repetition can be expressed in the use of pronominal or synonymous substitutions.

The chain connection can be seen in the successive engagement (with the help of lexical repetition) of sentences for each other.

Parallel communication more often occurs if the first sentence contains an adverbial word (answering questions like “where? when?”), and all the other sentences adjoin the organizing center of the first sentence, organizing a parallel connection.

Complex non-union constructions (with a cause or result relationship) can act as the organizing center. As all the other sentences are also without conjunction, they fulfill the function of syntactic parallelism in the text.

As a center for parallel communication, simple narrative sentences or exclamatory sentences consisting of one word can also be used (Winter!).

Mixed communication involves a combination of serial and parallel communication in speech

The key (semantic) clue is expressed in the fact that not all the words are repeated in IPL, but key words that perform a special semantic load. These words play an important role in revealing the topic and the main idea.

An analysis of the literature shows that when preparing teachers for work with the IPL, it is important to show not only the characteristics of coherent speech, but also the methods of their use in working with senior pre-school children.

A study of the literature also convinces us that in psychology, psycholinguistics, and the methodology for the development of speech, the questions of integrating the methods of analyzing the IPL with the cognitive, communicative, mental, physical activity of senior preschool children remain unexplored.

Problem Statement

The subject of the research is identification of the anthropological components of pedagogues' preparation for development of the cognitive regulation in senior pre-schoolers by the criterion of IPL.

Hypothesis Statement

We suggested that the integration of the communicative, physical, cognitive, mental aspects of children's game activity will help increase the level of IPL skills in both children and kindergarten teachers. This level will ensure the successful development of cognitive regulation of behavior in senior pre-schoolers.

Task Statement

Highlight the characteristic components of the anthropology of preparing future teachers for the development of cognitive regulation of senior pre-school children according to the IPL criterion.

Research Questions:

How to integrate the methods of analysis of IPL with the cognitive activity of senior preschoolers?

How to conduct a pedagogical experiment to test the methods of analysis of the IPL (in the classroom at the university or during teaching practice in kindergartens)?

What components underlie the anthropology of preparing future teachers for the development of cognitive regulation of pre-school children according to the IPL criterion?

The goal of the research

The goal of the research is to identify the anthropological components of pre-school teachers' preparation for development of the cognitive regulation of pre-schoolers by the criterion of IPL.

Methodology

The methodology of the research is based on thought theory (Piaget, 1932), speech activity (Leontiev, 1976), typology of texts (Werlich, 1975), rhetoric influence of texts (Williams, 1983), mechanisms of coherent speech (Zhinkin, 1998).

Research methods: psycholinguistic methods of text analysis, methods of pedagogical interpretation of linguistic data, pedagogical experiment, methods of mathematical processing of research results.

Experimental base: kindergartens of Kazan - No. 88, No. 408, No. 387, No. 143 (Republic of Tatarstan).

Results

The diagnostics of the level of IPL mastery in children and kindergarten teachers has been performed with the aim of identifying the level of realization of anthropological components in 2019-2020. The sample constituted 244 senior pre-schoolers and 23 kindergarten teachers. Three levels of IPL mastery have been determined: the first level (High) – faultless construction of IPL in speech; the second level (Intermediate) – one mistake in the construction of IPL; the third level (Low) – two and more mistakes in the construction of IPL. For the purpose of diagnostics utterances made by the children and teachers in the process of 5-7-minute spontaneous communication has been employed.

The results are presented in Table 1.

Table 1. Diagnostic results IPL in the speech of children and kindergarten teachers before the pedagogical experiment (in%)

Examined category	High level	Intermediate level	Low level
Children	12	47	31
Kindergarten teachers	34	37	29

As we can see, neither children, nor their kindergarten teachers show high indicators in the level of ownership of the IPL: both children and teachers have an average level. This suggests that the speech of kindergarten teachers is not always a role model.

A two-day training workshop with kindergarten teachers was held.

To conduct a pedagogical experiment, we used poems with a pronounced IPL, vivid illustrations for each action associated with a keyword (causing a mental - artistic - image), physical exercises synchronized with the rhythm of the poem.

As an example, we offer the text of the poem "Hare".

The hare rushes like the wind,

The hare wants to burrow.

Then it runs, then it circles.

Poor, it's afraid of everything,

Where to hide from evil:

From the fox, from the marten,

From the eaglet and the eagle?

It's afraid of even squirrel,

Songbird, even small.

Ears are arrows, tail is a twig,

Jumped fast and kept silence.

In this poem, the word hare is used as the IPL: in the first sentence, the word hare, in the second sentence it, in the third sentence it, in the fourth sentence the abbreviated pronoun it (or the noun hare). The connection of sentences is chain (sequential).

According to the poem, a table was drawn up (Table 2). Game activity of children was developed according to the scheme:

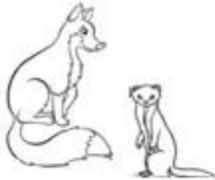
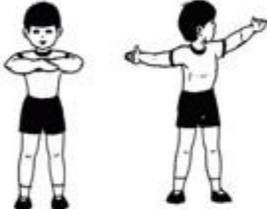
- 1) consider the illustration (who is drawn? what is it doing?);
- 2) select the main (key) words (hare, it);
- 3) we perform the physical action shown in the illustration;
- 4) we do as drawn, and repeat the poetic line at the same time as the physical action.

Then the poem is read without questions and comments synchronously with physical actions 2-3 times step by step.

The next day, the skills of reproducing the text and physical actions from the memory are carried out according to the presented illustrations.

Table 2. Implementation of anthropological components in the process of educational activities

Anthropological components			
Mental (associative- <u>imaginal</u>)	<u>Interphase</u>	Physical	Cognitive- communicative
	The hare rushes like the wind,	imitate running on the spot	
	The hare wants to burrow.	cover your face with palms	
	Then it runs, <u>then it circles.</u>	running on the spot	

	<p>Poor, it's afraid of everything, Where to hide from evil:</p>	<p>hands with a boat in the face</p>	
	<p>From the fox, from the marten,</p>	<p>turns left and right, imitating the tail of the fox and the tail of the marten</p>	
	<p>From the eaglet and the eagle?</p>	<p>showing the wings of an eagle, arms wide apart</p>	
	<p>It's afraid of even squirrel,</p>	<p>showing the ears of the squirrel</p>	
	<p>Songbird, even small.</p>	<p>showing the beak of birds with clasped fingers</p>	
	<p>Ears are arrows, tail is a twig, Jumped fast and kept silence</p>	<p>showing hare ears, arms extended up</p>	

Those exercises were carried out for 3 months.

Based on the results of the pedagogical experiment, a re-diagnostics of the level of the IPL by children and kindergarten teachers was carried out.

The results are presented in Table 3.

Table 3. The results of the diagnostics of IPL in the speech of children and kindergarten teachers before the pedagogical experiment (in%)

Examined category	High level	Intermediate level	Low level
Children	64	28	8
Kindergarten teachers	75	23	2

As you can see, the results have changed significantly in a positive direction in both children and kindergarten teachers.

Chart 1 (see chart 1) shows that after the pedagogical experiment, the average and high levels of mastery of IPL have changed significantly: high from 12% (in children) and 34% (kindergarten teachers) increased to 64% (in children) and 75% (kindergarten teachers).

At the same time, the average level of mastery of IPL has significantly decreased: from 47% (for children) and 37% (for kindergarten teachers) to 28% (for children) and 23% (for kindergarten teachers).

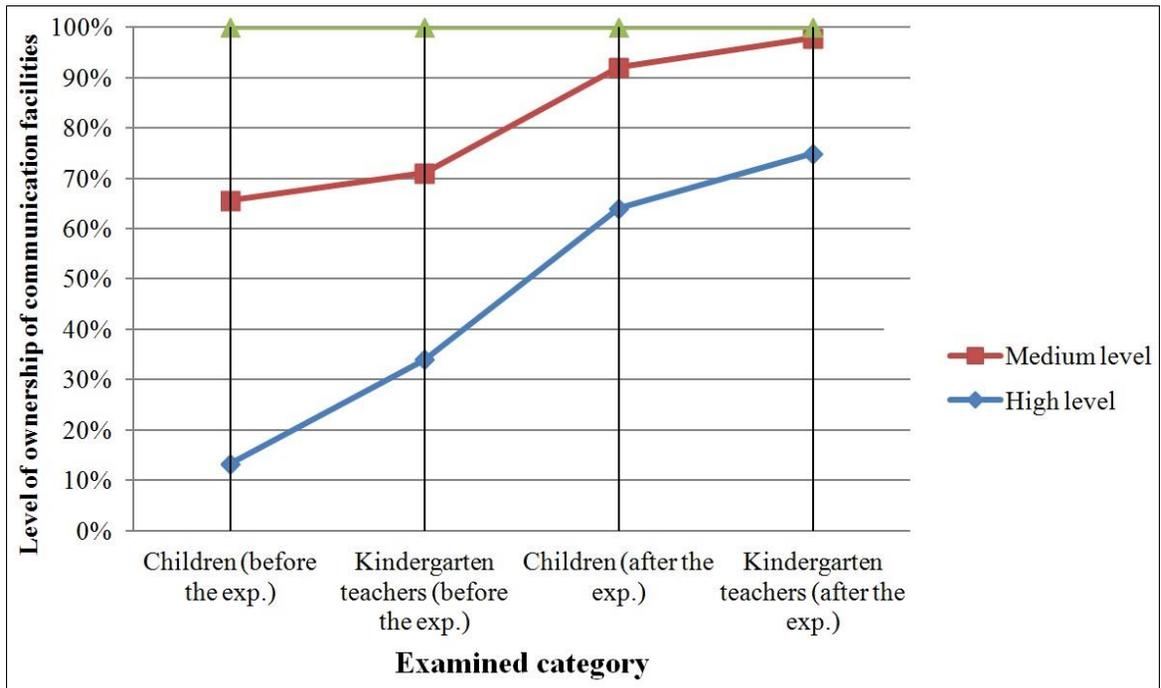


Diagram 1. Comparative characteristics of intermediate and high levels of mastery of IPL in children and kindergarten teachers

Positive results of the experiment indicate that the reserves of IPL in the communicative, cognitive and physical activities of pre-school children have not yet been fully used.

Discussion

IPL as a criterion for the diagnosis of coherent speech and the effectiveness of the development of cognitive regulation of behavior through physical exercises cannot be recognized as the only and universal one.

Additional research is needed into the arsenal of means for developing cognitive regulation of behavior used by kindergarten teachers of pre-school institutions for the development of cognitive, intellectual, mental, physical health-improving and other activities of senior pre-school children.

Conclusion

As a result it has been concluded that play activity of pre-schoolers was deployed according to the following scheme: 1) recitation of a poem and watching an illustration (actualization of associative-imaginal flow); 2) highlighting the key words of IPL; 3) performing physical actions shown in the picture; 4) pronunciation and synchronous performance of the pictured physical actions; 5) reproduction of mental (associative-imaginal) content, communicative and physical actions from memory. Evaluation of the above-mentioned exercises at kindergartens of Kazan has shown the positive result as to the mastery level of IPL in children and teachers. Moreover, it has had a significant influence on the development of regulatory functions of behaviour in senior pre-schoolers.

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References

- Bower, G. H. (1981). Mood and memory. *American Psychologist*, 36, 129-148.
- Cannella, G. S. (2005). Reconceptualizing the field (of early care and education). *Critical issues in early childhood education*, 17.
- Crawley, R. A., & Eacott, M. J. (2006). Memories of early childhood: Qualities of the experience of recollection. *Memory & cognition*, 34(2), 287-294.
- Dijk, T. A. (1980). *Text and context: explorations in the semantics and pragmatics of discourse*. London: Longman.
- Dridze, T. M. (1984). *Text activity in the structure of social communication*. Moscow: Prosveshenie.
- Endler, N. S., Parker, J. D. (1994). Assessment of multidimensional coping: task, emotion and avoidance strategies. *Psychological Assessment*, 6, 50-60.
- Gabdulchakov, V. F. (2011). Language education in Tatarstan's kindergartens. *International Journal of Early Years Education*, 19(2), 185-188.

- Gabdulchakov, V. F. (2014). Personification of Multicultural Education in the Universities of Russia (Analysis of Training Specialists for Kindergartens). *Procedia - Social and Behavioral Sciences*, 146(25), 129-133.
- Gerstadt, C.L., Hong, Y.J., & Diamond, A. The relationship between cognition and action: Performance of children 3½ - 7 years old on a Stroop-like day-night test. *Cognition*, 53(2), 129-153.
- Gioia, G. A., Isquith, P. K., & Guy, S. C. (2001). Assessment of executive function in children with neurological impairments. In *Psychological and developmental assessment*. (Eds.). R. Simeonsson, & S. Rosenthal. New York: Guilford Press.
- Gray, J. A. (1994). Three fundamental emotional systems. In *The nature of emotion: Fundamental Questions* (Eds.). P. Ekman & R. J. Davidson. New York: Oxford University Press.
- Halliday, M. A. (1974). The place of 'functional sentence perspective in the system of linguistic description. *Papers on functional sentence perspective*, 43-53.
- Jones, L., Rothbart, M. K., & Posner, M. I. (2003). Development of inhibitory control in preschool children. *Developmental Science*, 6(5), 498-504.
- Kagan, J., Snidman, N., & Arcus, D. (1998). Childhood derivatives of high and low reactivity in infancy. *Child Development*, 69(6), 1483-1493.
- Kapinos, V. I. (1994). *Speech development: Theory and practice of learning*. Moscow: LINKA-press.
- Khomsкая, E. D. (2002). Neuropsychology of emotions: hypotheses and facts. *Psychology Questions*, 4, 24-31.
- Kochanska, G., Coy, K. C., & Murray, K. T. (2001). The development of self-regulation in the first years of life. *Child Development*, 72(4), 1091-1111.
- Kochanska, G., Murray, K., & Coy, K. C. (1997). Inhibitory control as a contributor to conscience in childhood: From toddler to early school age. *Child Development*, 68(2), 277-263.
- Kochanska, G., Murray, K. T., Harlan, E. T. Effortful. (2000). Control in early childhood: Continuity and change, antecedents, and implications for social development. *Developmental Psychology*, 36(2), 220-232.

- Kochanska, G. (1997). Inhibitory control in young children and its role in emerging internalization. *Child Development*, 67(2), 490-507.
- Leontiev, A. A. (1976). Signs of coherence and integrity of the text. *Linguistics of the text*, 103, 60-70.
- Lvov, M. R. (2000). *Fundamentals of speech theory*. Moscow: Academia.
- Mikhalskaya, A. K. (1996). *The basics of rhetoric: thought and word*. Moscow: Prosveshenie.
- Novikov A. I. (2007). *Text and its semantic dominants*. Moscow: Nauka.
- Novikov, A. I. (1983). *Semantics of the text and its formalization*. Moscow: Nauka.
- Nosenko, E. L. (1975). *Features of speech in a state of emotional tension*. Dnepropetrovsk: DGU.
- Petrenko, V. F. (1997). *The basics of psychosemantics*. Smolensk: Izdaletelstvo SGU.
- Piazhe, Z. H. (1932). *Child's speech and thinking*. Moscow: Pedagogika-Press.
- Pisareva, O. L., & Gricenko, A. (2001). Cognitive regulation of emotions. *The Journal of Philosophy and Social Science*, 2, 64-69.
- Rothbart, M. K., Ahadi, S. A., Hershey, K. L., & Fisher, P. (2001). Investigations of temperament at three to seven years: The Children's Behavior Questionnaire. *Child development*, 72(5), 1394-1408.
- Savina, E. A. (2015). The problem of the development of arbitrary regulation in children. *Modern Western psychology*, 4(4), 45-54.
- Sevbo, I. P. (1969). *Coherent text structure and abstracting automation*. Moscow: Nauka.
- Sidorova, M. Y., & Savel'ev, V. S. (2002). *Russian language and culture of speech*. Moscow: Mysl.
- Veraksa, N. E., & D'yachenko, O. M. Ways to regulate the behavior of pre-school children. [Online article]. Retrieved from <https://hr-portal.ru/article/sposoby-regulyacii-povedeniya-u-detey-doshkolnogo-vozrasta>
- Werlich, E. (1975). *Typologie der Texte. Entwurf eines textlinguistischen Modells zur Grundlegung einer Textgrammatic*. Heidelberg: Egon Werlich Published.

Williams, W. (1983). *Composition in Rhetoric*. Boston: Boston Publishing.

Yusupov, M. G. (2009). *The interaction of mental states and cognitive processes during learning activities of students* (Ph.D Dissertation). Kazan: Kazan Federal University.

Zhinkin, N. I. (1998). *Language. Speech. Creation*. Moscow: Mysl.