

Comparative Analysis of the Effectiveness of Individual and Group Forms of Language Learning in the Zone of Proximal Development in Middle School Age

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The research is devoted to the problem of organization of language learning in the zone of proximal development by means of actualization of language intuition. Hypotheses are tested: training to translate texts containing quasi-words in the zone of proximal development leads to growth of the level of language competence; under specific conditions, training in a small group in the zone of proximal development is no less effective compared to the individual teaching of each pupil. The sample consisted of 74 children under 12 years old. An intergroup two-factor experiment was conducted (presence / absence of training – individual / group work). The author's technique "Translation of texts consisting of quasi-words into Russian" was used. The teacher's assistance in translating quasi-words into Russian in the form of reflexive cooperation with the child, encouraging him to recreate the integral meaning of the text in combination with checking the meanings of quasi-words for compliance with the morphological / grammatical context is the optimal strategy for teaching using quasi-texts. Training leads to improved skills of completing unfinished words in sentences in Russian. The effectiveness of training in a small group indicates the possibility of taking into account the zone of proximal development of each child in group work.

Keywords: zone of proximal development, quasi-language, assessment of the development of the Russian language, reflection of the child on the facts of the language, language, language competence, language learning.

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Сравнительный анализ результативности индивидуальной и групповой форм языкового обучения в зоне ближайшего развития в среднем школьном возрасте

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Исследование посвящено проблеме организации языкового обучения в зоне ближайшего развития посредством актуализации языковой интуиции. Проверяются гипотезы: обучение переводу текстов, содержащих квазислова, в зоне ближайшего развития ребенка приводит к повышению уровня языковой компетенции; при определенных условиях обучение в малой группе в зоне ближайшего развития является не менее результативным по сравнению с работой педагога с каждым учеником в отдельности. Выборка состояла из 74 детей в возрасте 12 лет. Проводился межгрупповой двухфакторный эксперимент (наличие/отсутствие обучения — индивидуальная/групповая работа). Использовалась авторская методика «Перевод на русский язык текстов, состоящих из квазислов». Оптимальной стратегией обучения с использованием квазитекстов является помощь педагога в переводе квазислов на русский язык в форме рефлексивного сотрудничества с ребенком, побуждающего его к воссозданию целостного смысла текста в сочетании с проверкой значений квазислов на соответствие морфологическому/грамматическому контексту. Обучение приводит к улучшению навыков дополнения незаконченных слов в предложениях на русском языке. Результативность обучения в малой группе указывает на возможность учета зоны ближайшего развития каждого ребенка при групповом обучении.

Ключевые слова: зона ближайшего развития, квазиязык, оценка развития русского языка, рефлексия ребенка на факты языка, язык, языковая компетенция, языковое обучение.

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Introduction

The study of the native language and its use in speech practice is the most important area of the formation of the child's personality throughout the entire speech ontogenesis. At school age, due to the growing gap between the enrichment of speech experience in everyday life and the need to acquire the language knowledge at school, which, to a significant extent, are of a formal nature, the organization of effective language learning becomes a psychological and pedagogical problem. Especially acute, against the background of the emerging crisis of educational activity, the problem becomes in middle school age [4]. To solve it, it is necessary to use such forms of organization of the educational process and such methodical support that allow for language learning and diagnostics of the language acquisition's level in the zone of proximal development (ZPD) of pupil [2].

The need to use unusual linguistic tasks in the course of teaching, which are not reproductive, but search, problematic, in nature, actualizing the creative independence of pupil in working with the text, is acutely felt within the framework of pedagogical practice [7; 11; 12]. To organize effective language learning, linguistic tasks should create conditions for the actualization of the child's language intuition (sense of language). The significance of this characteristic for language learning can be understood within the framework proposed by E.D. Bozhovich. It has an original approach to understanding language competence as an integral psychological system consisting of three mutually reinforcing components — language knowledge, speech experience and sense of language [4]. The sense of language allows a child to intuitively understand separate utterances and texts based on hidden semantic connections, identify systemic aspects of language in speech, monitor and check the speech product for compliance with the norm

of use, evaluate the correctness and appropriateness of using certain language units in a given speech context, as well as — in conditions of lack of knowledge. On the basis of unconscious generalization, the child's inner images of linguistic phenomena are formed [4; 6; 24]. The importance of appealing to the child's sense of language in the course of teaching is noted by many teachers; sense of language is regarded as the most important methodical category in the practice of language teaching [3; 11; 24].

We believe that the methodical technique of actualizing the sense of language in a child can be the use of quasi-words in the construction of linguistic tasks. In such words, the root bases are meaningless, but the morphological /grammatical rules of their structure are similar to the rules of the Russian language. The task of adequately translating quasi-language constructions into Russian, taking into account the linguistic context, creates conditions for the child's reflexive attitude to language phenomena [23].

The idea of using a quasi-language to actualize language reflection is not new. Back in the 30s of the XX century, linguist L.V. Shcherba offered students of the linguistics course to analyze the sentence "*Glokaya kuzdra shteko budlanula bokra i kurdyachit bokryonka*" in order to identify linguistic rules [20]. The phrase turns out to be meaningful due to the fact that the quasi-words retain all the necessary morphological features of real words of the Russian language and are grammatically related to each other. The effectiveness of using quasi-language material for the purposes of language learning was shown earlier in a sample of younger schoolchildren. After the children were offered tasks for the formation of case endings of quasi-words, for the adequate solution of which it was necessary to apply the rules of the formation of cases of Russian words, the pupils used the experience gained quite effectively when solving problems for the formation of case endings of "Russian" nouns [22]. We assume that in older ages, to test the hypothesis about the influence of quasi-language tasks on improving of the knowledge of the Russian language, it is necessary to use the text level in the construction of quasi-linguistic tasks.

As E.D. Bozhovich notes, in the course of working with unusual language material, schoolchildren can focus both on the grammar rules studied at school ("grammarians") and semantic component of utterances ("semantics"). Semantic orientation prevails because it corresponds, in the terminology of L.S. Vygotsky [8], to "spontaneous" learning and accumulation of speech experience during communication. Taking into account its grammatical component when working with language material is the result of "reactive" learning according to the teacher's program, and causes less interest among schoolchildren. Teaching "grammarians" to take into account the semantics of utterance when performing tasks, and teaching "semantics" to focus on the grammatical structure of utterances is a difficult problem in

the process of school education. Only the integration of these components during the formation of language competence allows a child to treat the sentence / text as an integral language sign [3]. We assumed that the task of translating texts with quasi-words into Russian would allow a child, along with taking into account the semantics of the text, to reflexively treat its grammatical component. The formation of such strategy will be effective, if a pupil cooperates with a teacher, corresponding to the principle of diagnostics and learning in the child's ZPD.

The concept of "zone of proximal development" (ZPD), developed by L.S. Vygotsky, is of crucial importance for the theory and practice of diagnosing of the child's mental development. In general terms, what a child is able to do at the moment only in cooperation with an adult is the child's ZPD. Using the concept of ZPD researcher can predict which cognitive tasks a child will be able to solve independently without the help of an adult in the near future [9]. The principle of diagnosing of the child's mental development in ZPD has become the leading principle of organizing and conducting of learning in domestic and foreign psychological and pedagogical practice [1].

Learning work in the ZPD is possible if many conditions are met. The child-adult cooperation should occur during the performance of certain tasks corresponding to the studied area of mental development. The tasks must be cognitively difficult so that the child can solve them with the assistance of an adult. The educator must respond in a dosed, timely and adequate manner to the mistakes and correct decisions of the child, offering him such assistance that allows the learner to reach a new level of understanding of the problem solution. It is necessary for an adult to ensure the emotional and motivational involvement of a child in the learning process, to reinforce his cognitive activity and initiative at all stages of interaction, and, ultimately, to contribute to the formation of a child as a subject of his own activity [2; 13—16; 21]. This list of conditions, which does not pretend to be complete, demonstrates the complexity of the implementation in practice of the ZPD principle when educational work with a child is being organized.

There are very few studies of language development taking into account the principle of ZPD. In addition to our research mentioned earlier [22], it is necessary to note the work of E.D. Bozhovich, in which the possibilities of creating conditions for the diagnosis of language competence through indirect cooperation with a pupil, i.e. through specially organized stimulus material, with which each pupil worked independently, were studied. The levels of help were created by: offering children different rules for operating with language material samples in solving problems of converting personal sentences into impersonal ones; including phraseological units that needed to be explained in different contexts of sentences with varying degrees of difficulty for understanding. Various types of work with language material were found de-

pending on the zone of actual development of children, the dynamics of changes during the transition from task to task with varying complexity was revealed. It has been revealed that the possibilities of diagnosing of ZPD of language competence in the absence of interaction of the teacher directly with each pupil are limited by methodical possibilities and the actual level of language competence of pupils [2]. Thus, empirically, the question of teaching a child in ZPD in the field of language competence in the course of cooperation with an adult, involving the level of a sentence / text, has not been worked out.

Considering the concept of ZPD, L.S. Vygotsky noted that its identification is possible not only in the context of cooperation with an adult, but also in interaction with peers [10]. As G.A. Zuckerman notes, developing interaction in the ZPD is more effective if it is deployed within the framework of the “adult – study group” community [21]. From the point of view of A.-N. Perret-Clermont, the members of the study group should have such characteristics that, in the situation of solving the problem, would lead to a socio-cognitive conflict. The creation of groups in which participants have different levels of knowledge and development of intellectual abilities, and, therefore, can express different points of view on the solution of a problem task, makes it possible to actualize socio-psychological conditions for cognitively intense activity of all participants in the educational process [25]. Important parameters for the formation of study groups can be: the levels of intellectual development and cognitive activity of a pupil, his competence in a certain area in which learning takes place; the sociometric status of pupil. Differences of children in these characteristics in one group may be one of the conditions for making an “individual contribution” to group work [5]. Taking into account the socio-psychological context there are created learning, emotional-motivational and cognitive prerequisites for effective cooperation of the teacher with a group of pupils in the ZPD [19]. Verification of this provision in the context of language learning in the ZPD seems to be an urgent task. Taking into account in the experimental study all the factors discussed above that determine the activity of a child in a small study group is the subject of a separate study. In our study, the selection of pupils into small groups was carried out only according to one criterion – the level of language competence assessed by the teacher. On the one hand, such selection of pupils allowed to ensure the equivalence of experimental and control groups to each other in terms of language competence, and on the other hand, selection of pupils allowed to create conditions for a cognitively rich discussion in groups in which children with different levels of language competence jointly solved the tasks set by the experimenter.

The purpose of the study was to compare individual and group forms of learning in a child’s ZPD from the point of view of effectiveness in improving of the level of language competence in middle school age.

A research scheme was implemented in the study that allows to test **hypotheses**:

- learning to the translation of texts containing quasi-words in the ZPD improves the level of language competence in middle school age;
- the group form of organization (in a small group in cooperation with a teacher) of solving quasi-language tasks provides approximately the same increase in the level of language competence in Russian as the individual form of learning (a pupil in cooperation with a teacher).

The most important results are presented.

Sample

The study involved three 6th graders from different secondary schools in Moscow. In each class, the experiment was conducted on samples of 24–25 pupils aged 12 years.

Research Method and Procedure

The research scheme was an inter-group two-factor (presence / absence of learning in the ZPD – individual / group work) experiment without preliminary testing of the level of language competence in Russian.

At **the first stage**, the Russian language teacher in each class assessed the level of knowledge of children on a 5-point scale. The estimates were used for stratified selection of children into groups. Each class was divided into four subgroups, there was approximately an equal number of subjects in each subgroup. Two experimental and two control groups were created from the subgroups. Each group included one subgroup from the class.

At **the second stage**, an experiment was conducted. The author’s technique “Translation of texts consisting of quasi-words into Russian” was used. It includes five texts with different plots. The texts contained mainly quasi-words, which are formed in accordance with morphemic / word-formation models of Russian words (for example, sentences from text No. 1: “*Gal na odnom garote Kiremet’. Na garote eshche gali sarapushki, babary i paritki*” [“*Kirem gals in garot. There were also sarapushkies, babars and paritkies in garot*”]). Each text consisted of a unique set of quasi-words, in different texts the same Russian word could be represented by different quasi-words. The child was given a task to translate the text into Russian. Russian instructions noted that the roots of quasi-words may differ in sound and number of syllables from the roots of Russian words, but the way they are formed and used in sentences corresponds to the rules of the Russian language. The indicators were analyzed:

- a) semantic correspondence of the translation of quasi-words to the general meaning of the text and relevance of the translation option in this sentence (“Semantics”);
- b) taking into account when translating the morphemic / word-formation model of the quasi-word and the

possibility of adequate translation taking into account the language rules of other quasi-words in the text derived from the quasi-root of this word (“Grammar”);

c) a variant of the translation of the quasi-word according to the principle of sound similarity (the decoding is based on the sound similarity of the quasi-root of the word with a certain Russian word) (“Sound similarity”).

Each answer was rated from 0 to 2 points. For each text, the points were converted into percentages of the maximum possible amount of points for each text. In pilot studies, the equivalence of texts to each other in terms of the level of complexity of working with them has been proved [23].

At the introductory stage, each pupil individually translated text No. 1. Then experimental learning was carried out with each subsample from the class using texts No. 2–4.

At the formative stage, learning was carried out in two experimental groups. In two control groups, the work with artificial texts was similar to the work carried out at the introductory stage. Working with each text took one training session (conducted in one day).

In the experimental group “Individual learning” (one subgroup from each class, 6–7 subjects in each subgroup, a total of 3 subgroups – 20 children) during the learning stage, each child independently translated quasi-texts. After completing each task, the experimenter teaches each child based on the nature of his mistakes, allowing the child to correct his translation based on the assistance of the experimenter. When the child was guided when translating into account the general meaning of the text without focusing on the morphology of words and their grammatical role in sentences, the experimenter suggested turning to the analysis of the meanings of quasi-words within the framework of the language rules set by the text, similar to the rules of the Russian language. If the child was mainly aimed at morphological / word-formation analysis of quasi-words, taking into account their grammatical role in sentences, but the semantic integrity of the text was violated, the experimenter suggested that the child reflexive the meanings of individual words that are key to understanding of the entire text. Thus, the experimenter, in the course of cooperation with a child, provided assistance similar to the tactics of “process assistance” developed within the framework of the reflexive activity approach [17], i.e. sought to help realize incorrect decisions and find ways to overcome difficulties in translating quasi-texts. The purpose of this learning was to develop the only correct approach for the child, from our point of view, to the translation of experimental texts into Russian: to recreate the general meaning of the text and meanings of words in combination with checking the translation for compliance with the proposed morphological and grammatical context.

In a similar way, children from the experimental group “Group learning” (one subgroup from each class, 6 subjects in each subgroup, a total of 3 subgroups – 18 children) learned with the difference that children were asked to decode “artificial” texts in pairs, after

which the experimenter conducted a discussion of translations with the whole group, based on the nature of children’s mistakes, giving each child the opportunity to express their translation options, allowing all children to adjust their translations based on group decisions. When pairs formed, teachers’ assessment scores were taken into account: in each pair, children had different ratings.

In the control groups, the experimenter did not interfere in the course of the children’s work, i.e., there was not teaching in the ZPD.

In the control group “Individual work” (one subgroup from each class, 6 subjects in each subgroup, a total of 3 subgroups – 18 children), the children were performing the same task as at the introductory stage.

In the control group “Group work” (one subgroup from each class, 6 subjects in each subgroup, a total of 3 subgroups – 18 children), children were asked to decode “artificial” texts in pairs, after that the whole group had the opportunity to independently discuss their translations and adjust them depending on the results of the discussion. The experimenter only recorded the final decision of the group.

At the final stage of the experiment, each pupil individually translated text No. 5.

At *the third stage*, diagnostics of the general level of language competence in Russian was carried out in each class in the form of a lesson. The C-test was used (U. Ratz, N.B. Mikhailova). The test includes 5 small texts in which words with missing parts occur with a certain frequency. The subject needs to read the text and complete the unfinished words semantically / grammatically correctly. Each correct execution is estimated at 1 point. “Raw” scores were converted into equivalents of school ratings in accordance with the test manual [18]. Estimates of the parameters of the C-test were recognized by us as indicators of the level of learning result of children.

Statistical data processing was carried out using the STATISTICA 12 package. The following methods were used: ANOVA to compare several related or unrelated samples by level of characteristic; Newman–Keils criterion for *Post Hoc* analysis procedure.

Results

Based on the teachers’ expert assessment scores, each class was divided into four, approximately equal, parts (6–7 pupils in each part). Approximately equal number of children who received ratings “3”, “4” and “5” from teachers were selected for each group. The subgroups from each class were randomly distributed into two experimental and two control samples. No differences were found between them in the performance of the task with experimental text No. 1.

Differences in the indicators of “Semantics” and “Grammar” of translations of texts No. 5 and No. 1 in the groups “Individual learning” and “Group learning”

($p < 0.001$) were revealed: the average percentage of correct translations of quasi-words into Russian increased in both groups. The results of the translation text No. 5 in the group “Individual learning” were higher than in the group “Group learning” ($p < 0.05$) on both indicators. In the control groups, the change in all parameters was statistically insignificant. At the same time, if there were no differences in the indicators “Semantics” and “Grammar” between the group “Group learning” and the control groups, then in the group “Individual learning” there was a tendency to higher scores on these indicators compared to the control groups ($p < 0.10$).

Taking into account the factor of teachers’ assessments shows that in the group “Individual learning”, an increase in the percentage of words correctly translated

into Russian in terms of their semantic and grammatical correspondence to the context was demonstrated by all children, regardless of expert assessment scores ($0.01 < p < 0.001$). An increase in children’s scores, regardless of teachers’ assessment scores, was found in the “Group learning” sample by the indicator “Grammar” ($p \leq 0.05$). The semantic correctness of the translation of quasi-textual material has significantly increased only in children previously rated by teachers as “four” ($p < 0.01$, in all other subgroups the level of significance of the increase is $0.06 < p < 0.17$). In the control groups selected on the basis of teachers’ assessment scores, no significant increase was found in any of the indicators of the effectiveness of translation of experimental texts. The distinctions clearly described are shown in Figures 1 and 2.

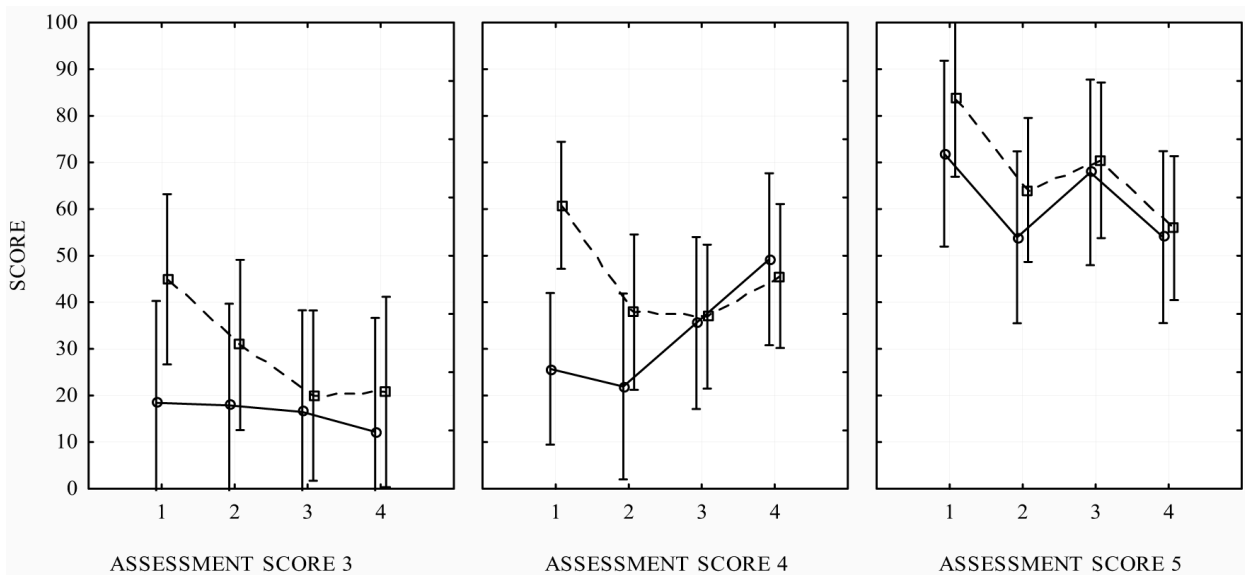


Fig. 1. Inter- and intra-group differences based on the results of preliminary test using text No. 1 and final test using text No. 5, taking into account preliminary expert assessment scores on the characteristic “Semantics”: — — — — preliminary test; — — — — final test; groups 1 — “Individual learning”, 2 — “Group learning”, 3 — “Individual work”, 4 — “Group work”

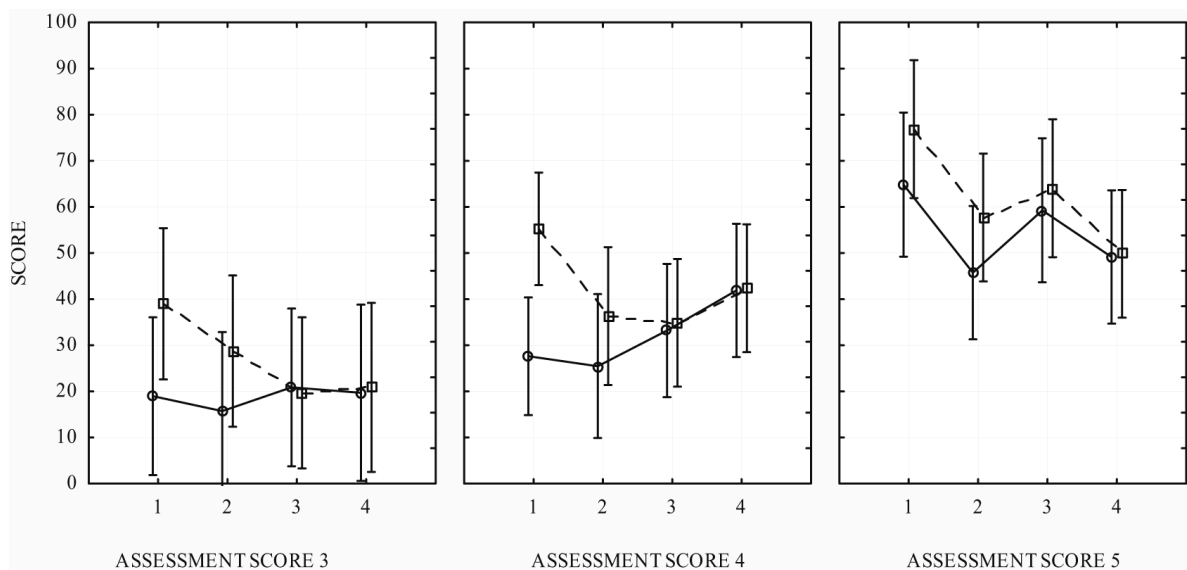


Fig. 2. Inter- and intra-group differences based on the results of preliminary test using text No. 1 and final test using text No. 5, taking into account preliminary expert assessment scores on the characteristic “Grammar”

Differences were found between the groups according to the level of performance of the C-test. The pupils from the group “Individual learning “ had the highest scores. Although this group did not differ statistically significantly from the “Group learning” sample, its scores were higher compared to the “Individual work” ($p < 0.05$) and “Group work” ($p < 0.05$) groups. The analysis of the results taking into account expert assessment scores showed that if there are no differences between children according to the C-test scores depending on expert assessment scores in experimental groups, then there are distinct differences in the level of language competence between pupils with teachers’ assessment rating scores “3” and “5” ($p < 0.05$ and $p < 0.001$, respectively) in control groups. In the absence of inter-group differences between pupils with teachers’ assessment rating scores “4” and also between pupils with teachers’ assessment rating scores “5”, children who received rating “3” from teachers had school ratings on the C-test higher than pupils with rating “3” from both control groups ($p < 0.005$) after the individual teaching of the experimenter in the child’s ZBR. A less pronounced effect was observed in pupils with teachers’ assessment rating scores “3” from the group “Group learning” ($p \leq 0.05$). The results are shown graphically in Figure 3.

Discussion

The learning in the ZPD proved to be effective in both experimental samples. However, since there were differences in the parameters “Semantics” and “Grammar” of text No. 5 between the groups “Individual learning” and “Group learning”, the effect of this learning is more pronounced in the first group. The small differences between the “Individual learning” group and control groups are explained by the fact that at the introductory

stage, the control groups had slightly higher results than both experimental samples.

Differences in the estimates of the effectiveness of the translation of experimental texts No. 1 and No. 5 in subgroups, taking into account the teachers’ expert assessment scores, show that individualized teaching of each pupil in the ZPD leads to an improvement in the skills of translating quasi-language material. The positive effect of the learning in the conditions of a small group was less pronounced. Independent work on the translation of quasi-texts does not improve the quality of translation. Due to the objective complexity of the tasks, it can be assumed that their solution without the assessment of an adult remains, using the V.K. Zaretsky’s term, in the individual “zone of unbearable difficulty” of pupils [14]. In the case of group work, uncontrolled by the experimenter, pupils could collectively offer such versions of translations of quasi-words, which often distanced them from the correct solution of the linguistic task, and socio-psychological processes arising during the discussion led to collective uncritical adoption of these decisions. The proposed tasks are quite difficult for children in middle school age. Apparently, this is the reason why the joint solution of tasks in subgroups composed of pupils of different levels of knowledge of the Russian language did not lead to positive results. It is also known that the introduction of forms of pupil collaboration into the learning process is a difficult task until the age of 13–15 years [19]. The relative effectiveness was shown by the situation of discussing of translations by a group together with an experimenter who helped resolve the contradictions that arose in children, which is proof of the importance of the role of an adult in the effective use of the social context of learning to achieve learning goals [19; 25]. It should be noted that in the case of group teaching children with different levels of language competence, learning in an individual ZPD was

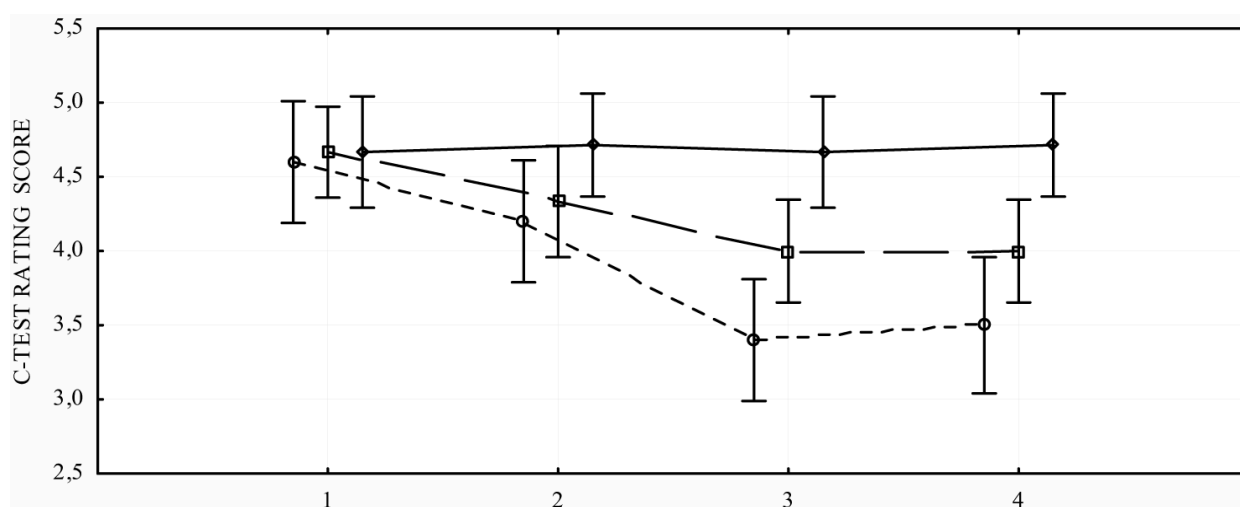


Fig. 3. Inter- and intra-group differences in C-test rating scores of the depending on the factor of expert assessments: - - - - expert rating “3”; - - - - expert rating “4”; - - - - expert rating “5”

an ideal goal, which, nevertheless, the experimenter sought to get as close as possible. He could analyze and generalize specific mistakes in the answers of pupils, use typical examples of mistakes to formulate helpful questions that bring children closer to understanding their strategies for translating quasi-texts into Russian. At the same time, it was necessary to promptly provide such assistance, which for the majority of pupils in the group would relate to the individual ZPD of each of them. The correct answers of children for whom the solution of the proposed tasks was still carried out in the zone of actual development were used by the experimenter for joint reflection of the methods of action with the pupils.

The inter-group differences in the C-test scores give grounds to assert that a relatively high level of learning in operating with language material is achieved by children who have undergone individualized learning. The children were sensitive to the assistance in the ZPD provided by the experimenter, they had a transfer of the experience gained to solving similar tasks in Russian. The analysis, taking into account the teachers' assessment scores, shows that learning in the ZPD led to smoothing out the differences in the level of language competence that existed between children before the experiment. If the children in the experimental groups after the teaching did not differ from each other in the C-test scores depending on the teachers' assessment scores of knowledge of the Russian language, then the C-test scores generally corresponded to the teachers' assessment scores in the control groups. Taking into account the factor of expert assessments allows to say that the teaching in the ZPD led to an improvement in the skills of semantically / grammatically correct addition of unfinished words in sentences in those children who had a low level of knowledge of the Russian language before the experiment.

The proposed teaching program using quasi-language tools allows to teach not only each pupil, but also a small group, taking into account individual ZPD. This

aspect is important for the practice of school education. Paired work of children with subsequent teacher-controlled group discussion helps pupils with low level of language competence to make clear progress in a relatively short time in understanding the language rules, which corresponds to the ideas about the importance of social interaction for effective learning [5; 19; 25]. For pupils with high level of language competence, classes with the use of more complex quasi-language tasks are necessary.

Conclusions

- The use of texts consisting of quasi-words in which the root bases are a meaningless set of syllables, but their word formation and grammatical roles correspond to the rules of the Russian language, during learning in the zone of proximal development leads to an improvement in the skills of semantically / grammatically correct addition of unfinished words in Russian sentences.
- The greatest effectiveness in improving the level of language competence is observed in children with a low level of language knowledge.
- The optimal strategy of language learning using quasi-texts is the teacher's assistance in translating quasi-words into Russian in the form of reflexive cooperation with a child, encouraging him to recreate the integral meaning of the text in combination with checking the meanings of quasi-words for compliance with morphological and grammatical context.
- The group learning in the form of cooperation of pupils with each other and an adult, during which the teacher uses typical mistakes of children for joint reflection of translation strategies in the zone of proximal development of the majority of pupils in the group, uses the correct answers of pupils with high level of language competence as material for a reflexive discussion of the way to solve linguistic tasks by the whole group, leads to increased efficiency of language learning.

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