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SEMIOTIC TRANSFORMATION AS A METHOD OF ENHANCING STUDENT ENGAGEMENT IN LEARNING THE RUSSIAN LANGUAGE

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The article examines semiotic transformation as an effective tool for enhancing student engagement in learning Russian as a second language. In the digital age, traditional approaches require adaptation to the characteristics of Generation Alpha, marked by visual and multimodal information processing. The theoretical basis is R. Jakobson's concept of intersemiotic translation, reinterpreted for educational practice. The term "semiotic transformation" more accurately reflects the cognitive and speech processes of sign recoding. The empirical part is based on a methodological experiment with sixth-grade students in a Kazakh-medium school. The diagnostic stage revealed an average level of engagement and the limited multimodal content of traditional textbooks. During the formative stage, tasks using semiotic transformation were integrated into lessons, including the interpretation of artworks, music, and animation translated into verbal form. This approach increased attention, interest, and readiness for discussion. The results confirm that semiotic transformation fosters engagement, stimulates speech activity, and promotes a holistic perception of language as a cultural system. The study highlights the need to further develop methodology and improve teaching materials with multimodal strategies.

Keywords: semiotic transformation, Russian as a second language, learning engagement, multimodality, methodological experiment.

ОРЫС ТІЛІН ОҚЫТУ БАРЫСЫНДА ОҚУ ҮДЕРІСІНЕ ҚЫЗЫҒУШЫЛЫҚТЫ АРТТЫРУ ҚҰРАЛЫ РЕТІНДЕ СЕМИОТИКАЛЫҚ ТРАНСФОРМАЦИЯ ӘДІСІ

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Мақалада орыс тілін екінші тіл ретінде оқыту барысында оқушылардың оқу үдерісіне қызығушылығын арттырудың тиімді құралы ретінде семиотикалық трансформация әдісі қарастырылады. Цифрлық дәуір жағдайында дәстүрлі оқыту тәсілдері қазіргі оқушылардың ақпаратты қабылдау ерекшеліктеріне бейімделуді қажет етеді. Альфа буынына тән сипат – ақпаратты визуалды-мультимодальды қабылдау. Зерттеудің теориялық негізі Р. Якобсон ұсынған межсемиотикалық

аударма ұғымына сүйенеді, ол білім беру тәжірибесі аясында қайта пайымдалған. Оқытудағы таңбаларды қайта кодтау үдерісін бейнелеу үшін «семиотикалық трансформация» термині қолданылады. Ол жүріп жатқан когнитивтік және тілдік операцияларды дәлірек сипаттауға мүмкіндік береді. Зерттеудің эмпирикалық бөлігі қазақ тілінде оқытатын мектептің алтыншы сынып оқушылары арасында жүргізілген әдістемелік экспериментке негізделген. Диагностикалық кезеңде оқушылардың оқу үдерісіне тартылуының орташа деңгейі анықталды, сондай-ақ дәстүрлі оқулықтардың мультимодальды материалдар жағынан шектеулілігі байқалды. Қалыптастыру кезеңінде сабақтарға семиотикалық трансформацияға негізделген тапсырмалар енгізілді: бейнелеу өнері, музыка және анимация туындыларын интерпретациялап, оларды сөздік формаға көшіру. Мұндай тәсіл оқушылардың назарын күшейтіп, тапсырмаларға деген қызығушылығын және талқылауға дайын болуын арттырды. Эксперимент нәтижелері семиотикалық трансформация әдісінің оқу үдерісіне тартылуды арттыруға, сөйлеу әрекетін белсендіруге және оқушылардың тілді мәдени жүйе ретінде тұтас қабылдауын қалыптастыруға ықпал ететінін дәлелдейді. Мақалада осы әдістемені одан әрі дамыту қажеттілігі және оқу материалдарын мультимодальды оқыту стратегияларын ескере отырып жетілдірудің маңызы атап өтіледі.

Түйінді сөздер: семиотикалық трансформация, орыс тілі екінші тіл ретінде, оқу үдерісіне тартылу, мультимодальдылық, әдістемелік эксперимент.

СЕМИОТИЧЕСКАЯ ТРАНСФОРМАЦИЯ КАК МЕТОД ПОВЫШЕНИЯ УЧЕБНОЙ ВОВЛЕЧЁННОСТИ ПРИ ИЗУЧЕНИИ РУССКОГО ЯЗЫКА

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В статье рассматривается метод семиотической трансформации как эффективный инструмент повышения вовлечённости учащихся при изучении русского языка как второго. В условиях цифровой эпохи традиционные подходы требуют адаптации к особенностям поколения Альфа, для которого характерно визуально-мультимодальное восприятие информации. Теоретической основой исследования стало понятие междисциплинарного перевода, предложенное Р. Якобсоном, которое переосмыслено в контексте образовательной практики. Для обозначения творческого процесса перекодировки знаков в обучении используется термин «семиотическая трансформация», позволяющий точнее описать происходящие когнитивные и речевые операции. Эмпирическая часть работы представлена методическим экспериментом, проведённым среди шестиклассников школы с казахским языком обучения. На диагностическом этапе выявлен средний уровень вовлечённости и ограниченность традиционных учебников в части мультимодального материала. На формирующем этапе в занятия были интегрированы задания, основанные на семиотической трансформации: интерпретация произведений живописи, музыки и анимации с их переводом в словесную форму. Такой подход усилил внимание, интерес к заданиям и готовность учащихся к обсуждению. Результаты эксперимента подтверждают, что метод семиотической трансформации способствует росту учебной вовлечённости, активизации речевой деятельности и формированию у школьников целостного восприятия языка как культурной системы. В статье подчёркивается необходимость дальнейшего развития методики и совершенствования учебных материалов с учётом мультимодальных стратегий обучения.

Ключевые слова: семиотическая трансформация, русский язык как второй, учебная вовлечённость, мультимодальность, методический эксперимент.

Introduction. Rapid socio-cultural change and digital transformation impose new demands on educational systems, which must identify methods that both ensure high levels of learner engagement and correspond to their cognitive specificities. Generation Alpha, raised in a multimedia environment, is characterised by visual orientation, multitasking ability, and a preference for interactive formats [1; 2]. These features determine the ways in which information is perceived and necessitate the adaptation of methods for teaching Russian as a second language. A persistent challenge remains the development of sustainable learning motivation and engagement among schoolchildren, directly linked to the formation of sociocultural competence as an integral quality of personality [3].

A promising direction in language teaching methodology is the use of semiotic transformation as a didactic method that involves the recoding of information across different sign systems – verbal, visual, auditory, and multimodal. Building on R. Jakobson's concept of intersemiotic translation, defined as the "interpretation of verbal signs by means of nonverbal sign systems" [4, p. 233], we propose replacing the term "intersemiotic translation" with "semiotic transformation." Unlike the notion of "translation," which is primarily associated with linguistic mediation, the concept of "transformation" more fully reflects the cognitive and creative operations of school students in the educational process [5; 6].

Semiotic transformation creates opportunities for enhancing student engagement in the learning process. It is implemented through visual interpretations of literary works (illustrations, comics, and infographics), multimodal presentations of language material, and the integration of video and music, which make lessons more interactive and meaningful [7; 8]. This method contributes to the development of speech and communicative skills while also fostering a deeper understanding of cultural codes.

Contemporary research confirms that media materials and digital tools enhance learning motivation and engagement due to their emotional richness and multimodal presentation of information [9; 10]. Working with media content stimulates attention, critical thinking, and creativity through collaborative discussion and the interpretation of cultural meanings [11]. International studies likewise report increased cognitive activity when visual and auditory resources are integrated into the learning process [12].

The empirical basis of the study relies on a methodological experiment conducted among sixth-grade students in a school with Kazakh as the language of instruction, where Russian is taught as a second language. At this age, learners demonstrate mixed cognitive characteristics: on the one hand, they are transitioning toward abstract thinking, while on the other, they retain a pronounced reliance on visual-figurative perception. In this regard, the method of semiotic transformation proves particularly effective in sustaining learning engagement, as it integrates visual perception with verbal practice and cultural interpretation. A comparative analysis of the control and experimental groups highlights the potential of this method in the context of bilingual education.

The purpose of the study is to determine the effectiveness of the semiotic transformation method in enhancing learning engagement and developing sociocultural competence among sixth-grade students in the process of learning Russian as a second language.

To achieve this aim, the following **objectives** were set:

1. To analyse the theoretical foundations of the semiotic transformation method and its pedagogical potential within the digital educational environment.
2. To identify the initial level of student engagement and the specific features of perceiving Russian as a second language.
3. To design and implement a system of tasks based on semiotic transformation, incorporating visual, auditory, and multimedia forms of work.
4. To conduct a comparative analysis of the results obtained in the control and experimental groups to assess the impact of the method on learning motivation and the development of sociocultural competence.
5. To formulate practical recommendations for the application of semiotic transformation in teaching Russian as a second language.

Materials and methods. A methodological experiment was conducted with 67 sixth-grade students of Secondary School No. 2 in Pavlodar, where the language of instruction is Kazakh and Russian is taught as a second language. The experiment was carried out from 30 September to 28 November 2024.

At the preparatory stage, a content analysis was carried out on the Model Curriculum and the Russian language and literature textbook for Grade 6 [13]. The analysis revealed that the materials are focused primarily on linguistic and grammatical aspects, while practical tasks involving visual and multimedia information are only marginally represented. Among the positive features is the variety of activity formats, including 88 tasks (10%) phrased as "Listen to the text/story/essay," which support the development of listening skills. However, the absence of audio accompaniment and references to digital resources makes their implementation difficult. The textbook also draws on a wide range of sources (encyclopedias, reference works), yet without providing specific citations, which reduces their practical value for independent student work. These findings confirmed the necessity of employing innovative methods, particularly the semiotic transformation method.

The experiment consisted of three stages: diagnostic, formative, and control. At the diagnostic stage, the initial level of student engagement was identified through diagnostic tasks and questionnaires, focusing on interest in lessons, willingness to complete assignments, and perception of the relevance of the learning material. During the formative stage, students were offered tasks based on semiotic transformation, such as converting visual, musical, and animated representations into verbal form and vice versa. This approach made the learning process more interactive and encouraged active participation in classroom discussions. At the control stage, repeated diagnostics revealed a positive dynamic in engagement and confirmed the effectiveness of the method.

Thus, the combination of the analysis of the Model Curriculum, the textbook, and the experimental results demonstrated that traditional teaching materials do not fully support learning motivation. The use of the semiotic transformation method helped to compensate for these shortcomings and made the process of learning Russian more appealing to school students.

Results and discussion. The level of learning engagement was measured through a questionnaire based on a five-point scale, which recorded students' interest in lessons, perception of the significance of tasks, and readiness to participate in learning activities [14]. The instrument was adapted for Russian language and literature classes and provided a quantitative basis for comparing the results of the control and experimental groups.

The analysis of questionnaire data obtained from 67 sixth-grade students revealed a predominance of an average level of learning engagement (Figure 1). According to the results:

- 36% of respondents scored below 3 points, indicating a low level of engagement;
- 46% fell within the range of 3.0 to 3.9, reflecting moderate and unstable motivation;
- only 18% demonstrated a high level (≥ 4.0), pointing to sustained learning motivation and a pronounced interest in the subject.

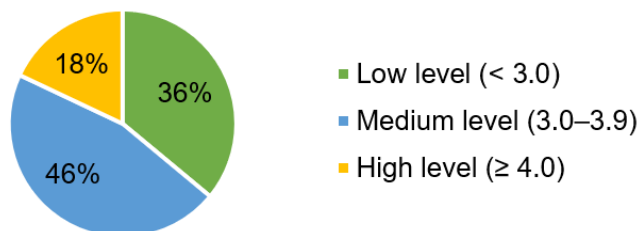


Figure 1 – Level of learning engagement among sixth-grade students

The analysis showed that the lowest ratings were given by students to statements related to the perceived usefulness of tasks (mean score – 2.8), interest in lessons (2.9), and anticipation of classes (2.7). These results indicate the insufficient personal relevance of the learning material and a weak connection between lesson content and students' life experience. Overall, the level of learning engagement among sixth-graders can be characterised as predominantly average, with a considerable group of students demonstrating low motivation.

To enhance engagement, the students were divided into two groups:

- 1) a control group, where instruction followed the standard curriculum;
- 2) an experimental group, where a set of tasks based on the method of semiotic transformation was implemented.

The experimental design constituted an integrated system of pedagogical interventions aimed at engaging students in working with various semiotic systems. The selection of materials was determined by the themes of the textbook units studied during the experiment ("Everything in a person should be beautiful" and "The living world around us"), which ensured their organic integration into the learning process. The tasks incorporated works of visual art (V. Polenov's "Grandmother's Garden," A. Denisov-Uralsky's "Forest Fire"), sculpture (P. Sokolov's "Girl with a Broken Jug," P. Klodt's "Horse Tamers"), and musical compositions (P. Tchaikovsky's "October. Autumn Song," N. Rimsky-Korsakov's "Three Wonders" from the opera "The Tale of Tsar Saltan"), as well as video materials (the animated film "The Snow Queen 3: Fire and Ice").

The tasks were designed with consideration of the visual thinking characteristic of contemporary students and provided for a gradual increase in the complexity of transformations: from the verbalisation of visual elements to collective interpretation and reflective analysis. The novelty of the experimental approach lay in the use of different semiotic systems as equal sources of cultural information, which fostered greater engagement and encouraged students' active participation in the learning process.

One example is an assignment based on V. Polenov's painting "Grandmother's Garden" (Figure 2), where students in the experimental group described the details of the image, shared personal impressions of the garden scene, and interpreted the actions and moods of the characters.



Figure 2 – V. Polenov, "Grandmother's Garden", 1878

The results showed that students' attention was primarily focused on the old house and the green garden (42% of responses). They noted the architecture of the house with its columns, its antiquity, and its beauty, as well as the lush vegetation surrounding it. Descriptions of the characters – the elderly woman in a black dress and the young girl in a light-coloured outfit – accounted for 40% of all responses. In 18% of cases, students focused on the actions: the granddaughter helping her grandmother, supporting her during the walk so that she would not fall. In a few responses, students suggested that “the girl is taking her grandmother away from the old house,” which indicates an attempt to interpret the scene in a more dramatic way.

When describing the emotions evoked by the garden, 36% of students mentioned sadness, attributing it to the sense of neglect and lack of care. In 33% of responses, students highlighted calmness and silence, which created a peaceful atmosphere. Another 21% perceived an element of mystery and enigma in the painting, associating it with the dense greenery and the old house. Particular attention was given to the expression of the characters' emotions: many students observed that the grandmother appeared sad and tired, while the granddaughter was perceived as caring and attentive.

The analysis showed that sixth-grade students perceive “Grandmother's Garden” not only as a depiction of a beautiful house and garden, but also as a symbol of family relationships, care for the elderly, and generational continuity. The painting evoked mixed feelings – from calmness and serenity to slight sadness associated with the image of the elderly woman and the neglected state of the garden. At the same time, the students' value worldview was expressed primarily through evaluative statements rather than individual lexical units [15; 16, p. 37].

When describing P. Sokolov's sculpture “Girl with a Broken Jug” (Figure 3), the students focused primarily on the image of the girl and her emotional state.



Figure 3 – P. Sokolov, “Girl with a Broken Jug”, St. Petersburg

65% of responses highlighted external details such as the girl's long dress and tied-up hair. Meanwhile, 45% of students emphasised her sadness and distressed facial expression, linking her emotions to the broken jug. Another 38% focused on the situation itself – the accidental breaking of the jug and the heroine's emotional reaction.

When asked why the jug was broken, students offered various interpretations. The most common version (about 30%) was that the girl accidentally dropped it while fetching water or carrying it home. In 18% of responses, the reason was attributed to the jug being heavy or old and cracking. In 15% of cases, students connected the event with external circumstances: rain, a slippery road, fright, or someone bumping into her. Around 10% interpreted the story more figuratively, suggesting that the girl was tired, lost her way, and accidentally broke the jug.

Thus, sixth-grade students perceive the sculpture primarily as a dramatic moment associated with the heroine's loss and emotional experience. For them, the central aspect is the combination of the girl's external beauty and her sadness. However, their interpretations of the reasons for the broken jug range from everyday and realistic to more imaginative and fairy-tale-like. This suggests that students are capable of both careful observation and imaginative interpretation of an artistic image.

When listening to P. Tchaikovsky's “October. Autumn Song,” students predominantly reported calm and bright emotions. About 60% stated that the music evoked a sense of tranquility, with some comparing it to “golden leaves” or “falling leaves.” Approximately 30% noted a slight sadness and a reflective mood while at the same time emphasising the beauty of the melody. A small proportion (10%) found it difficult to describe their emotions, limiting their responses to phrases such as “music for sleep.”

In terms of colour associations, warm shades – yellow, golden, and brown – predominated (55%), linked to autumn leaves. About 30% chose green and grey (“autumn forest,” “clouds in the sky”), while 15% mentioned orange and red (“bright leaves”).

The method of semiotic transformation, based on translating musical impressions into verbal and figurative forms, demonstrated its effectiveness: students did not limit themselves to listening but expressed the music through associations, colours, and descriptions. This fostered speech development, enriched vocabulary, and stimulated imagination. Incorporating the task into the unit “The Living World Around Us” strengthened the connection between the learning material and the students’ personal experience and had a positive impact on their engagement in the learning process.

When working with a fragment of the animated film “The Snow Queen 3: Fire and Ice” (13:29–14:40), sixth-grade students were given the following task: to watch the scene without sound, create a possible dialogue between the characters, describe their appearance, and express their own emotions.

The majority of students (about 75%) identified the key elements of the episode: “a cosy, warm home,” “a new guest arrived,” and “dinner at the table.” Particular attention was drawn to the humorous moment with the door: 34% of students noted that “it was funny when the door hit the boy.” In describing the characters’ emotions, 40% of students emphasised the girl’s joy (“she smiles, happy about the guest”), 35% pointed out the other girl’s displeasure (“angry, rolling her eyes”), and 25% mentioned the boy’s embarrassment (“he is confused, does not know what to say”).

The characters’ appearance was also described in considerable detail: “he is tall, wearing a jacket,” “he has dark hair,” “the girl is beautiful, in a dress,” “the other one looks like a strict sister,” “the boy is funny.” The atmosphere of the dinner was perceived positively. 68% of participants noted that “the food is hot and tasty,” “there are many plates and glasses,” and “everything looks beautiful.”

The dialogues composed by the students demonstrated their ability to interpret the characters’ behaviour and construct coherent exchanges:

- “Hello, I’m glad you came!” – “Thank you, I’m glad too!”
- “Why are you angry?” – “I don’t want him to be here.”
- “The dinner is delicious, try it!” – “Very tasty, thank you.”

The analysis of responses showed that about 85% of students successfully completed the task. The recoding of a visual plot into verbal form fostered the development of observation, imagination, and speech activity [17]. The use of the semiotic transformation method enabled students not only to retell the actions but also to convey the mood of the scene through emotions, associations, and dialogues. Thus, working with the animated film enhanced engagement, encouraged more active use of Russian in oral communication, and demonstrated the effectiveness of a polysemiotic approach for developing communicative competences.

The final stage of the experiment confirmed a positive dynamic in learning engagement among sixth-grade students in the experimental group. The data demonstrated consistent growth across all diagnostic scales (Figure 4): “interest in completing tasks” averaged 4.5 points (compared to 3.1 in the control group), “anticipation of the next lesson” reached 4.6 (compared to 2.9), and “engagement in discussing the content” was 4.7 (compared to 3.1).

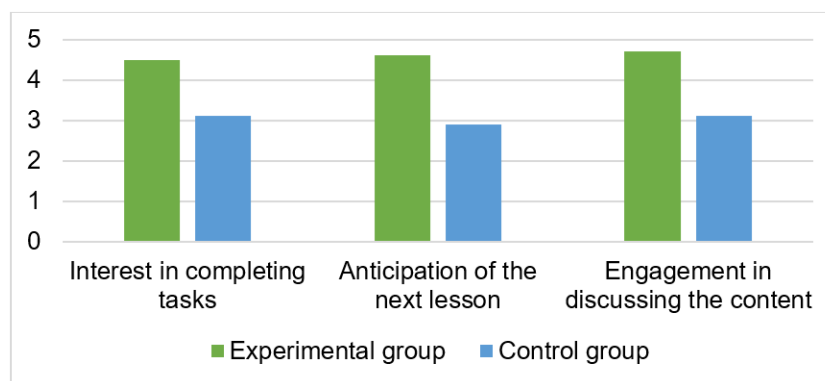


Figure 4 – Results of the final diagnostics of learning engagement among sixth-grade students

The results showed that the method of semiotic transformation, combined with multimodal materials, increases students’ interest in tasks, stimulates participation in discussions, and enables them to perceive the lesson as a meaningful experience connected with personal impressions and associations. This approach makes learning more emotionally engaging and strengthens motivation for studying Russian.

Conclusion. The study confirmed that the use of the semiotic transformation method contributes to an increase in learning engagement in the process of studying Russian as a second language. Translating information from one sign system into another makes the learning process more interactive, brings it closer to real communicative practices, and enhances the personal relevance of lessons for students.

This approach is particularly significant when working with Generation Alpha, characterised by a preference for visual and multimodal forms of information perception, heightened sensitivity to digital and multimedia formats, and an orientation towards interactive communication. Taking these features into account

makes it possible not only to sustain interest in lessons but also to foster lasting motivation for acquiring both the language and the culture.

The findings of the study make it possible to formulate the following recommendations:

- systematically integrate tasks based on semiotic transformation (translating visual, musical, and audiovisual images into verbal forms and vice versa) into the practice of teaching Russian;
- expand the use of multimedia and digital resources (film and cartoon fragments, musical works, and works of art), adapting them to the topics of textbook units and the age-specific characteristics of students;
- improve teaching materials by increasing the proportion of visual and interactive content and including references to audio and video resources in order to foster multimodal literacy;
- design tasks aimed at developing critical reflection on cultural phenomena, intersemiotic interpretation, and dialogic interaction;
- create a learning environment in which the lesson is perceived as a space for inquiry and exchange of ideas rather than as a formal obligation.

Thus, the method of semiotic transformation can be regarded as a promising direction in teaching Russian as a second language: it integrates cognitive, communicative, and cultural objectives of education, making the process more meaningful, engaging, and effective for today's school students.

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THE ROLE OF HEURISTIC AND AI TECHNOLOGIES IN ENHANCING STUDENTS' RESEARCH COMPETENCE: ANALYTICAL RESULTS OF A SURVEY

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In the context of rapidly changing educational paradigms and the increasing digitalization of learning, the development of students' research competence has become one of the key challenges in higher education. Traditional teaching methods often fail to foster inquiry-based thinking and independent problem-solving, making it necessary to explore innovative approaches that combine human creativity and technological support. The use of heuristic AI technologies in teacher education is highly relevant, as such tools stimulate exploratory thinking, support research-oriented learning, and help future teachers develop analytical and digital skills required in modern educational practice. This article presents the analytical results of a student survey aimed at exploring the role of heuristic and artificial intelligence (AI) technologies in developing research competence among university students. The study involved undergraduate students from the pedagogical faculty who participated in an online questionnaire assessing their attitudes toward research activities, understanding of research competence, and experience with heuristic and AI-based learning tools. The findings reveal that most respondents show a positive attitude toward research, acknowledging the effectiveness of heuristic methods such as creative inquiry, problem-based learning, and guided discovery. Students also reported that AI tools assist in data analysis, information retrieval, and generating feedback that supports autonomous learning. The results highlight the relevance of integrating heuristic and AI-driven