The Ethno Methodical Training of Future Teachers

ABSTRACT

Theoretical proof and practical development of ethnic textual teaching content for future English language teachers (undergraduate and graduate) is presented in the article. The definition of "ethnic education of future English teachers" is formulated. The structure of the "Future English Ethnic Textbook" education system is being updated. Levels of formation of ethnic methodological readiness of future English teachers are described. The results of the selected methodological support test for the bachelor's degree in "Ethnic English and its teaching methods" and the elective course for professors of "Professional English language teaching in a multilingual environment, ethnic education and ethnic mathematics" are presented.

Keywords: Ethno methodical training, English teachers, Future teachers.

Introduction

In the Decree of the President of the Russian Federation V.V. Putin of July 21, 2020 "On the national development goals of the Russian Federation for the period up to 2030" as one of the target indicators characterizing the achievement of the national goal "Opportunities for self-realization and development of talents" is defined "creating conditions for the upbringing of a harmoniously developed and socially responsible personality based on the spiritual and moral values of the peoples of the Russian Federation, historical and national-cultural traditions" (Ilyin & Morev, 2020). This provision is supported by previously approved documents: the Concept of the National Educational Policy of the Russian Federation (Boguslavsky, & Neborsky, 2016), where the priorities are the provision of high-quality education for children of multinational Russia, including by improving the qualifications of their teachers; professional standards "Teacher (pedagogical activity in preschool, primary general, basic general, secondary general education (educator, teacher))" (Topilin, 2013) and "Teacher of vocational training, vocational education and additional vocational education" (Topilin, 2015), where the need to educate students and schoolchildren, taking into account their cultural and individual characteristics, is noted. Based on this, it seems advisable to think over the specifics of training teachers for organizing educational activities of students, taking into account the historiography and cultural traditions of the region and the surrounding society. When teaching mathematics, a promising, but little used in Russia ethnomathematical approach, based on ethno English as "a field of scientific knowledge, the subject of which is folk mathematics," is a possible way of organizing the activities of schoolchildren that implements these provisions (Dyachkovskaya & Merlna, 2015).
However, the current pedagogical mathematicians (according to the data of the questionnaires conducted in 2016 and 2019), as the reasons for the low prevalence of the ethnomathematical approach in Russia, note that they lack the necessary knowledge about the specifics of the subject area under consideration (ethnomathematical lack of ready-made methodological developments (lesson plans, scripts of extracurricular activities). At the same time, the conducted polls showed the interest of teachers in ethno English and confirmed the need for special ethno English training of future teachers even in the conditions of a university.

This problem was considered in pedagogy, psychology, mathematics and the methods of teaching it. Thus, the need to take into account the ethnic characteristics of children has been proven in studies of ethnopedagogy (N.G. Volkov; T.N. Petrova, etc.); ethnopsychology (T.G. Stefanenko and others); ethno-didactics (F.G. Yalalov and others). In the field of ethno English, the leading works of foreign and domestic scientists have become: U. D’Ambrosio, who introduced the term “ethno English” into scientific circulation; G. Gilmer, who substantiated the content of the concept of “ethnomathematical approach”, V.V. Bobynin, the founder of the ideas of folk mathematics in the Russian school. The theoretical issues of ethno English were studied by V.P. M. Alberti; M. Asher, B. Barton; M.D. Dyachkovskaya, N.J. Merlin, B.L. Yashin and others.

The methodological aspects of the methodology of teaching ethno English to schoolchildren were considered by modern domestic scientists: O.O. Artyun, A.S. Mongush, S.K. Sat (ethnomethodics of teaching mathematics to students with disabilities in the Republic of Tyva); M.D. Dyachkovskaya (ethno English system of teaching mathematics to children of indigenous small peoples of the North (Yukaghir, Evenks) (on the example of the Republic of Sakha (Yakutia)); I.K. Kondaurova, L.N. (Saratov region); N.I. Merlina (organization of scientific research work of schoolchildren in mathematics based on historical and local history materials of Chuvashia); A.S. Mongush (use of applied problems with national and regional content as a factor in improving the quality of mathematical knowledge of students 5-9 grades (on the example of the Republic of Tyva), etc.

Scientists-methodologists have devoted works to the compilation and solution of ethnomathematical problems: M.D. Dyachkovskaya (historical, folklore and local history mathematical problems of the Republic of SAKHA (Yakutia)); I.K. Kondaurova, L.N. Matisheva (mathematical problems based on the historical, local history and folklore material of the Saratov region); A.V. Merlin, N.I. Merlin (collection of ethnomathematical problems of the peoples of Russia (Chuvashes, small peoples of the North (Nenets, Yukaghir, Evenks, Yakuks), Mongol-speaking peoples of Russia, etc.); N.A. Pyryko (mathematical problems of the peoples of the Far North (Nenets)); S.S. Salavatova (electronic textbook for students of Bashkir national schools “My Bashkortostan: mathematical problems with local history subjects), etc.

The problems of ethnomathematical and ethno English training of students were touched upon in the works of I.K. Kondaurova and A.A. Korostelev (preparation of future teachers to teach schoolchildren and students mathematics, taking into account the historical and cultural originality of the region); L.N. Matisheva (ethno English training of future bachelors of mathematics education); S.S. Salavatova (preparing students for the implementation of the national component in teaching mathematics at school); G. D. Tereshkina (expanding the professional competence of future teachers-mathematicians based on the inclusion of elements of ethno English of the indigenous small-numbered peoples of the North in the content of the discipline “History of Mathematics”), etc.

In their studies, the authors focus mainly on the national characteristics of the home region, the problem of teaching ethno English for Russia as a whole, as well as the ethnomethodological training of future teachers-mathematicians, in our opinion, is still far from fully disclosed. This determines the relevance of the selected topic.

Methodology
The purpose of the article is to theoretically substantiate, develop and test the content of the ethno English training of future teachers-mathematicians in bachelor’s and master’s degrees.

Research methods used in writing the article: analysis of psychological and pedagogical and methodological and mathematical literature; study of regulatory documents; generalization of the work experience of teachers of mathematics of secondary and higher schools, methodologists-mathematicians; development and testing of teaching materials.

The scientific novelty of the article consists in the development of the content of the ethno English training of future mathematicians at two levels of training (bachelor’s and master’s degrees).

The practical significance of the article is confirmed by the use of its materials for the organization of ethno English training of future teachers-mathematicians by introducing into the curriculum of training: bachelors-elective “Ethno English and the methodology of teaching it”; masters - optional disciplines “Professionally oriented mathematical education in a multilingual environment, ethnopedagogy and ethno English”.

Inessa Kondaurova
Results

Let's start with the definition of the concept "ethno English training of future mathematicians." It is well known that mathematics, as a science, complex under the mathematical representations of various ethnic groups, demonstrates that it has spread in a generalized form throughout the planet. In 1984, at the international congress on mathematics education ICME U. D'Ambrosio, the term "ethno English" was introduced into scientific circulation and was called upon to switch to ethnomathematical teaching of mathematics by introducing an ethnomathematical component into the teaching process that allows achieving the achievements of national cultures, thereby the very embodiment of the idea "world peace" (Dyachkovskaya, Merlina, 2015; Yashin, 2013).

The concept of "ethno English" was differently defined in the work of foreign (M. Asher, B. Barton and others) and domestic (B.L. Yashin, M.D.Dyachkovskaya, N.I. Merlin, etc.) scientists, but the opinions of all researchers were based on the idea that ethno English forms students' understanding of the subject in national historical development. We, under "ethno English", following M.D. Dyachkovskaya, we will understand "learning to use the mathematical culture of the people, its use by centuries of experience as an object of real reality, the subject is folk mathematics" (Dyachkovskaya, 2017).

The emergence of the term "folk mathematics" is associated with the name of V.V. Bobynin, defined by him in the essay "The state of mathematical knowledge in Russia before the 16th century" (1884) as the initial mathematical knowledge of the people ("possession of number and measure"), which was "acquired gradually, by the labor of a long series of generations, through observation and experience ... and through the application of the simplest inductive and empirical methods, preserved by oral transmission from generation to generation" (Bobynin, 1884). Modern researchers M.D. Dyachkovskaya and N.I. Merlina defines folk mathematics as "the totality of inductive and empirical mathematical knowledge and ideas accumulated in the history of the masses, as a product of observation and social experience, and passed down from generation to generation orally. The sections of folk mathematics are: 1) the counting system and numbering; 2) measurement of quantities (time, length, area, size, weight); 3) geometric information and their expression in outbuildings, folk applied art; 4) mathematical concepts and terms; 5) counting games, riddles, counting rhymes, proverbs and other types of oral folk art, mathematical knowledge; 6) popular tasks; 7) monuments of ancient folk mathematics that are in museums, collections, etc." (Dyachkovskaya, Merlina, 2015).

In 1990, G. Gilmer proposed to use the concept of "ethnomathematical approach", within the framework of which mathematical aspects of ethnic culture are introduced into the content of school mathematics (Gilmer, 1995). Today, domestic and foreign scientists (M. Asher, V. Barton, P. Gerdes, N.I. Merlina, etc.) define the ethnomathematical approach as "directed enrichment of the forming influences with ethnomathematical elements" (Dyachkovskaya and Merlina, 2015). Summarizing the above, in this framework of this model of teaching mathematics, focused on the mathematical development of students, taking into account their ethnic characteristics, the expected enrichment of the educational content of the ethnomathematical component and the choice of the corresponding goal and content of forms, methods and means of teaching. The ethnomathematical approach to teaching can be implemented by: changing the content of education and creating educational and methodological literature, taking into account national (national) students; organization of the learning process, involving the choice of forms, methods, teaching techniques, taking into account ethnic students. In the scientific literature, the term "feature" is commonly understood as a characteristic, distinctive property, distinctive feature, originality, someone or something. In the domestic scientific tradition, students' ethnic (national) characteristics are classified into three groups: ethnophysiological (Dyachkovskaya, 2017); ethnopsychological (Krysko, 2019); ethnicultural (Afanasyeva, 2009).

By the ethno English system of teaching mathematics we mean "an ordered structure, the components of which are goals (results), approaches, principles, content, forms, means, techniques and methods, correction corresponding to the ethnic nature of the individual, and aimed at increasing the efficiency and comfort of learning" (Dyachkovskaya, 2017). The main means of implementing ethno-oriented teaching in mathematics are ethnomathematical problems, "the plot of which contains regional and / or ethnicultural information; At the same time, mathematics is demonstrated as a means of helping to solve economic and production problems"(Dyachkovskaya, 2017). In other words, teaching mathematics should be built taking into account the national specifics of cognitive activity, perception, thinking, memory, functional activity of the higher nervous system, ethnicultural characteristics of students (Vertysakova, 2014).

The introduction of an ethno English system of education in general and mathematics in particular in schools and universities of multinational Russia is one of the pressing problems of our time (Dyachkovskaya, 2019). One of the options for solving this problem is the organization, even at the stage of training at a university, ethno English training of future teachers. By ethno English training of future teachers-mathematicians we mean a controlled process and the result of their mastering a system of professional knowledge, skills and competencies in the field of ethno English and methods of teaching ethno English. The methodological system "Ethno-methodical training of future teachers-mathematicians" consists of four components: target, meaningful, procedural, and effective.
The target component of ethno English training is focused on the formation and development of the future teacher's readiness to implement the ethnomathematical approach in teaching mathematics at school (bachelor's degree) and at a university (master's degree). Achievement of this goal can be carried out by performing a number of tasks, among which we will single out educational and developmental ones. Educational tasks: familiarization with the psychological and pedagogical aspects, general and specific issues of teaching methods of ethno English; development of skills for the development of methodological support for the implementation of the ethnomathematical approach in teaching mathematics at school and university. Developing tasks, first of all, include the formation of the ability to see and use the rich capabilities of ethno English.

The mastery of ethno English knowledge and skills occurs in the process of studying the theoretical and practical blocks of the content of ethno English training. In the undergraduate program, the theoretical content block is represented by the following questions: ethno English as a field of scientific knowledge (historiography of ethno English; folk mathematics; basic terminological concepts of ethno English, ethnopsychology, ethnopedagogy, ethnodidactics, etc.); psychological and pedagogical aspects (national characteristics of students and ethnopedagogical traditions of various social groups) (Gilmanshina et al., 2021). And normative and documentary support for teaching ethno English (Constitution of the Russian Federation, Federal Law "On Education in the Russian Federation", Concept of National Educational Policy of the Russian Federation, Federal State Educational Standards, etc.); general and specific questions of the methodology of teaching ethno English (basic concepts and principles of the methodology of teaching ethno English; content of ethnomathematical education; ethnomathematical problems, etc.). The magistracy studies: the use of the ethnomathematical approach in teaching mathematics to students; the specifics of designing a non-discriminatory bilingual national environment for interaction in teaching mathematics for vocational training (VET), secondary vocational education (SVE), higher education (HE) (bachelor's level), supplementary vocational educational programs (DPOP).

In the practical block of content in the bachelor's degree, the following issues are studied: selection and use of methods, forms and means of teaching ethno English; designing lesson and extracurricular activities of students using ethnomathematical material. In the magistracy: the development and features of the use of methodological support for the implementation of mathematical disciplines in a bilingual national environment (methods, technologies, teaching methods, teaching materials (including control and measuring materials) for conducting certain types of training sessions); ethnomathematical problems in the context of university mathematics education.

The procedural component of the methodological system under consideration includes methods, means and forms of ethno English training. An important role is given to creative forms and methods of teaching (business game, "round table", the use of information technologies in the learning process, blocks of individual assignments, creative works, etc.). Ethno English training of future teachers-mathematicians is carried out mainly through the development and implementation in the educational process: in the bachelor's degree course "Ethno English and the methodology of its teaching", in the master's program of the optional discipline "Professionally oriented mathematical education in a multilingual environment, ethnopedagogy and ethno English", the main result of the study which should be formed by the bachelor's (master's) readiness to implement the ethnomathematical approach in teaching mathematics at school (university) - an effective component. Tables 1 and 2 show the level-by-level characteristics of the formation of the ethno English readiness of future mathematicians in undergraduate and graduate programs.

<table>
<thead>
<tr>
<th>Level</th>
<th>Knowledge and skills</th>
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</table>
| High  | Knows: the national characteristics of students and the specifics of the organization of teaching mathematics using ethnomathematical material.  

Is able to independently:  
- Find and use information about the cultural characteristics and traditions of various social groups, which is necessary for interacting with participants in the educational process in mathematics using ethnomathematical material;  
- To formulate the goals of teaching ethno English; explain educational ethnomathematical material, solve and explain the tasks of elementary mathematics using ethnomathematical material;  
- apply the most effective methods, means, forms of organization of teaching ethno English;  
- Select and design subject content (educational ethnomathematical material) based on the contextual analysis of educational mathematical texts, according to the ethnomathematical approach used;  
- On the basis of the context analysis of educational, educational and methodological materials, choose methods, forms and means of teaching ethno English.  

Owns: the skills of organizing ethno-oriented teaching of mathematics at school. |
<table>
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<tr>
<th>Level</th>
<th>Knowledge and skills</th>
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<tbody>
<tr>
<td>High</td>
<td>Knows: characteristics of behavior and motivation of people of various social and cultural backgrounds; the reasons for the emergence of social customs and differences in human behavior. Knows how to be independently: design and apply, in a non-discriminatory bilingual national environment of interaction, methodological support for the implementation of mathematical disciplines in software programs, secondary vocational education, HE (bachelor’s level), additional vocational education, using ethnomathematical material. Possesses: the skills of creating a non-discriminatory environment for interaction in the implementation of mathematical disciplines under the programs of software, secondary vocational education, HE (bachelor’s level), additional vocational education, tolerantly perceiving ethno-confessional and cultural differences of participants in the educational process.</td>
</tr>
<tr>
<td>Average</td>
<td>Has fragmentary knowledge of: behavior and motivation characteristics of people of various social and cultural backgrounds; the reasons for the emergence of social customs and differences in human behavior. Knows how, with the help of a teacher: to design and apply in a non-discriminatory bilingual national environment of interaction, methodological support for the implementation of mathematical disciplines in programs of software, secondary vocational education, HE (bachelor’s level), on additional vocational education, using ethnomathematical material. Poorly owns: the skills of creating a non-discriminatory environment for interaction in the implementation of mathematical disciplines in the programs of software, secondary vocational education, HE (bachelor’s level), in additional vocational education, tolerantly perceiving ethno-confessional and cultural differences of participants in the educational process.</td>
</tr>
</tbody>
</table>

Table 2. Characteristics of the levels of formation of ethno methodical readiness of future masters-mathematicians

<table>
<thead>
<tr>
<th>Level</th>
<th>Knowledge and skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Has scattered ideas about: the characteristics of behavior and motivation of people of different social and cultural backgrounds; the reasons for the emergence of social customs and differences in human behavior.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level</th>
<th>Knowledge and skills</th>
</tr>
</thead>
</table>
| Average| Has fragmentary knowledge: national characteristics of students and the specifics of the organization of teaching mathematics using ethnomathematical material. Knows how (with the help of a teacher):  
  - Find and use information about the cultural characteristics and traditions of various social groups, which is necessary for interacting with participants in the educational process in mathematics using ethnomathematical material;  
  - To formulate the goals of teaching ethno English; explain educational ethnomathematical material, solve and explain the tasks of elementary mathematics using ethnomathematical material; apply the most effective methods, means, forms of organization of teaching ethno English;  
  - Select and design subject content (educational ethnomathematical material) based on the contextual analysis of educational mathematical texts, according to the ethnomathematical approach used;  
  - On the basis of the context analysis of educational, educational and methodological materials, choose methods, forms and means of teaching ethno English. Poorly proficient in: the skills of organizing ethno-oriented teaching of mathematics at school. |

<table>
<thead>
<tr>
<th>Level</th>
<th>Knowledge and skills</th>
</tr>
</thead>
</table>
| Low   | Has scattered ideas about: national characteristics of students and the specifics of the organization of teaching mathematics using ethnomathematical material. Has difficulty with:  
  - Finding and using information about the cultural characteristics and traditions of various social groups, which is necessary for interaction with participants in the educational process in mathematics using ethnomathematical material;  
  - Formulating the goals of teaching ethno English; explaining educational ethnomathematical material, solving and explaining tasks of elementary mathematics using ethnomathematical material; the application of the most effective methods, means, forms of organization of teaching ethno English;  
  - Selection and design of subject content (educational ethnomathematical material) based on the contextual analysis of educational mathematical texts, in accordance with the ethno mathematical approach used.  
  - The choice of methods, forms and means of teaching ethno English based on the contextual analysis of educational, teaching and methodological materials. Does not own the skills of organizing ethno-oriented teaching of mathematics at school. |
Having trouble in: designing and applying, in a non-discriminatory bilingual national environment of interaction, methodological support for the implementation of mathematical disciplines in programs of software, secondary vocational education, HE (bachelor's level), additional vocational education, using ethno mathematical material. Does not own: the skills of creating a non-discriminatory environment for interaction in the implementation of mathematical disciplines under the programs of software, secondary vocational education, HE (bachelor's level), additional vocational education, tolerantly perceiving ethno-confessional and cultural differences of participants in the educational process.

The elective "Ethno English and the methodology of teaching it" (total labor intensity is one credit unit, table 3) is offered for study in the 4th semester of a pedagogical bachelor's degree (mathematical education).

**Table 3. Elective Thematic Planning (Bachelor's Degree)**

<table>
<thead>
<tr>
<th>№ n/n</th>
<th>Discipline section</th>
<th>Semester</th>
<th>Types of educational work, including independent work of students and learning intensity (in hours)</th>
<th>Forms of monitoring progress (by week of the semester) Intermediate certification forms (by semester)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lecture</td>
<td>Practice</td>
</tr>
<tr>
<td>1</td>
<td>Topic 1. Ethno English as a field of scientific knowledge</td>
<td>IV</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>Topic 2. Normative and documentary support and psychological and pedagogical aspects of teaching ethno English</td>
<td>IV</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Topic 3. General and specific questions of the methods of teaching ethno English</td>
<td>IV</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Total – 36 hours</td>
<td></td>
<td>-</td>
<td>16</td>
</tr>
</tbody>
</table>

The elective discipline "Professionally oriented mathematical education in a multilingual environment, ethnopedagogy and ethno English" (total workload 4 credits, table 4) is studied in 2-3 semesters of the master's program "Professionally oriented teaching of mathematics".

**Table 4. Thematic planning of an elective course (master's degree)**

<table>
<thead>
<tr>
<th>№ n/n</th>
<th>Discipline section</th>
<th>Semester</th>
<th>Types of educational work, including independent work of students and learning intensity (in hours)</th>
<th>Forms of monitoring progress (by week of the semester) Intermediate certification forms (by semester)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lecture</td>
<td>Practice</td>
</tr>
<tr>
<td>1</td>
<td>Topic 1. Ethnomathematical approach in teaching mathematics to students in a multilingual environment. Ethnopedagogy and ethno English.</td>
<td>II</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Topic 2. The specifics of designing a non-discriminatory bilingual national environment for interaction in teaching mathematics under the programs of</td>
<td>II</td>
<td>2</td>
<td>16</td>
</tr>
</tbody>
</table>
After studying each of the topics of these disciplines, students are invited to complete tasks for independent work. For example, after studying topic 3 “General and specific questions of methods of teaching ethno English” of an elective in a bachelor's degree, students are offered the following tasks:

1. Describe the content of ethno mathematical education (scientific and cognitive, value, normative and practical aspects of activity). What is the specificity of the content of ethno mathematical education for students of different age groups?

2. Analyze the content of the two selected mathematics textbooks recommended for the current academic year for the presence and volume of ethno mathematical material in them. Fill out the results in the form of a comparative table.

3. Find references to ancient Russian measures in literary works (AS Pushkin "Winter Road"; PP Ershov "The Little Humpbacked Horse"; NA Nekrasov "Grandfather Mazai and the Hares"; "Epic about Ilya Muromets" (written down by A.F. Hilferding) and others). Make a selection of "ethno mathematical excerpts" from these works and formulate the math questions for them.

4. Come up with ethnomathematical problems for students in grades 5-6 based on folk tales.

5. Get acquainted with the tasks of the section "Account" from the collection of V.I. Dahl "Proverbs of the Russian people. Draw illustrations for them and come up with an author's version of a similar problem.

6. Complete table 5, which contains the interpretation of proverbs and sayings containing mathematical knowledge:

<table>
<thead>
<tr>
<th>Proverb, saying, folk saying</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log to log - sazhen</td>
<td></td>
</tr>
<tr>
<td>The hut cannot be cut without four corners</td>
<td></td>
</tr>
<tr>
<td>Moving by leaps and bounds</td>
<td></td>
</tr>
<tr>
<td>Himself with a marigold, and a beard with an elbow</td>
<td></td>
</tr>
<tr>
<td>Do not give up an inch</td>
<td></td>
</tr>
<tr>
<td>Two inches from the pot, and already the pointer</td>
<td></td>
</tr>
</tbody>
</table>

**Table 5. Sample tasks**
<table>
<thead>
<tr>
<th>Each merchant measures</th>
<th>Moscow is a mile away, but my heart is near</th>
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</thead>
<tbody>
<tr>
<td>From word to deed - a whole mile</td>
<td></td>
</tr>
</tbody>
</table>

7. Read the article "Measure by your yardstick: the meaning and origin of expression" (http://fb.ru/article/326067/merit-na-svoy-arshin-znachenie-i-proishojdenie-vyirajeniya). Make a conclusion about the relevance of the expression "measure by your yardstick" at present.

8. Select and solve old math problems for students in grades 5, 6 and 7 in order to use them in: a) lesson activities; b) extracurricular activities.

9. Think of folk games that use different mathematical information (for example, the French "Number Game", the Nepalese game "Bag-chal", the Turkish game "Kitz-tawla", the Indian game "Jendrapur", the American game "Skelly" and etc.).

10. Prepare a presentation on the oldest board games (mancala, senet, mehen, backgammon, dominos, chess, and others). Make a conclusion about their influence on the development of thinking, logic, self-discipline.

11. Develop an interactive ethno English (local history) exercise (on the learning.apps platform).

12. Make a lesson outline using ethno English material.

13. Develop a script for an extracurricularethno English event.

**Conclusion**

The experimental work provided for the approbation of the developed content of ethno English training (methodological support of the elective course for bachelors "Ethno English and methods of teaching it" (2019/2020 academic year) and optional disciplines for masters "Professionally oriented mathematical education in a multilingual environment, ethno pedagogy and ethno English" (2016/2017, 2017/2018, 2018/2019, 2019/2020 academic years)). The experiment was carried out on the basis of the Saratov National Research State University with bachelors in the field of study 44.03.01 Pedagogical education (profile - Mathematical education) full-time education and masters in the field of training 04.04.01 Pedagogical education (profile - Professionally oriented teaching in mathematics) by correspondence and consisted of three stages (ascertaining; formative; control).

At the ascertaining stage of the experiment, through pedagogical observation, analysis of the products of students’ educational activities and questionnaires, the initial level of formation of the ethno English readiness of future teachers-mathematicians was determined: 9 students (12.5%) out of 72 people (100%) who took part in the experimental work have the average level of formation of ethno English readiness, the remaining 63 people (87.5%) are at a low level.

At the formative stage of the experiment, in accordance with the current training curricula, we conducted classes in the relevant disciplines, the purpose of which was, on the one hand, to approbate the developed methodological support for electives in the undergraduate and optional disciplines in the magistracy, on the other hand, we tried to interest students in studying ethno English and teaching methods.

At the control stage of the experiment, the following results were obtained: 6 students (8.3%) showed a high level of formation of ethno English readiness, 54 people (75%) - average, 12 people (16.7%) - low. Thus, after the experiment, we observed an increase in the level of formation of ethno English readiness among 57 students (79.17%), which allows us to draw a conclusion about the developmental impact of the developed content of ethno English training.

The presented materials can be used in the educational process of training future and retraining of existing teachers of mathematics at school and teachers of mathematics at a university.

We associate further prospects for the intensification of ethno English training of future teachers-mathematicians with the development and use of electronic educational resources as a means of supporting self-learning of students, with the digitalization of a professionally oriented educational environment.

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