Intellectual analysis of foreign students’ readiness to study at a Russian university

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Abstract. To optimize the learning process and improve the quality of professional training of foreign students, the study considers the process of forming the readiness of foreign students to study at a Russian university. The formation of readiness was analyzed within the framework of the pedagogical system of the preparatory faculty, which foreign students study. The study of the main components of the pedagogical system was carried out using Orange Data Mining, an intellectual analysis tool applied to the results of a survey of foreign students.

For the majority of respondents, the main goal of studying at the preparatory faculty is the study of Russian language and education in Russia. After receiving their education, most students plan to work at home, and some want to work in Russia, the United Arab Emirates, Canada, the USA, Iraq, Germany, and Australia.

The teaching process is characterized by the following features: a decrease in the level of basic training of foreign students, the difficult development of the Russian language, absenteeism and failure to complete homework.

In the process of studying, foreign students had psychological and personal problems, problems associated with living in a hostel, met with methodological and organizational difficulties. 19% of respondents did not mention any difficulties. Despite the existing difficulties, 93% of students are satisfied with the format of training and the content of disciplines; 96% of students are satisfied with communication with teachers and the quality of teaching.

The readiness of foreigners to learn a specialty in Russian is expressed in the knowledge of the Russian language, in the formation of motivation, activity and methods of activity and communication, which constitute the means of learning in the new educational and pedagogical environment. The formation of readiness is determined by psychological, social, pedagogical and temporal factors.

The success of the readiness formation process depends on how active the students are and how the pedagogical system helps to overcome difficulties. An analysis of the respondents’ opinions made it possible to build a model of the pedagogical system, which identifies the factors that influence the formation of the readiness of foreign citizens to study a specialty at a Russian university.

1 Introduction
Education of foreign students in higher educational institutions of Russia is a form of international cooperation that helps to increase the prestige of our country, a source of additional funding for Russian education [1], as well as a means of internationalization [2]. At present, international educational exchanges have acquired a global character. The level of international student mobility has increased: the number of foreign students in Russian universities has increased by 300% over the past 25 years [3], and has doubled over the past ten years [4].

The training of foreign students begins with training at the preparatory faculty, which has an important adaptive value and is characterized by a number of features and problems. It should be noted that every year about 10% of preparatory faculty students do not cope with the difficulties of adaptation and go home before the end of the academic year [5]. Studies have shown that it would be difficult for foreign students to continue their studies at the main faculties of Russian universities if they had not formed the required level of readiness for learning at the preparatory faculty [6, 7].

In order to optimize the process of foreign students teaching, it is important to analyze its organizational and pedagogical conditions, Russian teachers, unlike foreign ones, pay great attention to this process [8]. Kapelevich M.S. considers the readiness to continue education in a Russian university as an activity of the individual, manifested in four aspects: theoretical, which includes the amount of knowledge necessary for entering a university; practical, consisting of the necessary skills for the implementation of readiness; psychological and personal, which is based on indicators of the psyche spheres associated with the professional orientation of the individual [7]. Kurysheva L. O. considers the structure of foreign students’ readiness to study at Russian universities as a psychological and pedagogical phenomenon, formed by the relationship of social-adaptive, orientational-linguistic and professional-subjective components, which vary according to the criterion of the educational process duration at the pre-university stage [6]. The model of adaptive readiness formation of foreign citizens to study at the university Bondar E.A. proposes to consider as a set of introductory-motivational; operational-cognitive and reflective-evaluative stages [7]. The issue of developing new approaches to the formation of readiness remains relevant.

The study of the features and analysis of the problems of the education preparatory stage will make it possible to determine the factors and related problems that influence the formation of foreign students’ readiness to study at a Russian university. The elimination of problems will help to optimize the learning process and improve the quality of professional training of foreign students.

2 Materials and methods of research

Surygin’s research defines pre-university training of foreign students as an integral pedagogical system [8], a set of interrelated means, methods and processes necessary to create an organized, purposeful pedagogical influence on the formation of personality with given qualities. Therefore, we studied the process of readiness formation by analyzing a generalized model of the pedagogical system of the learning process at a university (Fig. 1). The study of the components and factors of this model from the point of view of achieving the main goal of the learning process we are considering - the preparation of a foreign student who would be willing to study the chosen specialty in Russian, made it possible to...
determine the factors and problems that affect the readiness of foreign students to study at a Russian university.

Fig. 1. A generalized model of the pedagogical system of the learning process at a university

The study of the main components of the pedagogical system was carried out using Orange Data Mining, an intellectual analysis tool applied to the results of a survey of international students studying at the preparatory faculty of the university. The survey included 50 questions.

Students

Fig. 2. Tag cloud “Residence countries of the respondents”

3 Students
Fig. 3. Map of respondents' residence countries

17% women and 83% men. There is a gender imbalance in favor of men. Approximately half of the women are going to study engineering. Therefore, the imbalance may be related to the unwillingness to study abroad, and not to the complexity of technical specialties. The majority of respondents (78%) are between the ages of 16 and 23 (Fig. 4).

The vast majority are single and unmarried (97%). The majority of respondents have secondary education (46%) and higher education with a bachelor's degree (30%), their age is related to this. 19% of respondents have a secondary specialized education, 5% have a higher education with a master's degree (Fig. 6).

Respondents mostly aged 19 to 24 have secondary specialized education (Fig. 5).

Fig. 4. Distribution of respondents by age and gender
Students come from different countries, respectively, they have a different level of knowledge and different experience of educational activities, reflecting their national and cultural characteristics. In the conditions of the new educational system, new content and a large amount of educational material await them. They will need to adapt to unusual living conditions, the requirements of the educational process organization and the knowledge control system, to form or develop the skills to perform educational activities in a new format. The adaptation process is complex, dynamic, multi-level process of restructuring [9], the success of which will largely be determined by the results of education at the preparatory stage. Namely, on how students, with the help of the pedagogical system, form the competencies of readiness to study at a Russian university, expressed in the required level of Russian language proficiency, the sum of basic knowledge of the necessary disciplines, in acquiring skills in working with educational information and communication methods.

4 Student goals

“How did you find out about the university?”, 4% of respondents noted that they had...
It should be noted that 61% of the respondents plan to study engineering and technology, 17% economics, 4% humanities, 13% biomedical (Fig. 8). The engineering and technical direction is objectively the most in demand, since the university where the respondents study is technical. In addition to the traditionally distinguished areas of study, respondents noted the following: 5% of respondents would like to study IT, programming, psychology and physics of nanostructures (Fig. 9). There is an opinion that the most demanded field of study for foreign students is the field of information technology, since in the world community Russia is the world leader in the field of computer science [10].
Students with a master's degree want to work in engineering (5 people) and economics (1 person). The most demanded industry for work is engineering (60%), the least demanded is the humanitarian industry (7%). The economic (18%) and biomedical industries (15%) are approximately equally in demand (Fig. 10).

It should be noted that foreign students often choose not the specialty that is in demand on the labor market, but the one that is easier to get [11]. In our case, the percentages for engineering (61% and 60%), humanitarian (4% and 7%), economics (17% and 18%), biomedical (13% and 15%) areas, respectively, for training and work do not differ much, except for the humanitarian direction.
Basically, students after receiving education plan to work in their homeland. The choice to study in Russia may indicate the respondents' dissatisfaction with the quality of education in their homeland, the complexity or cost of obtaining it. 16% have not yet decided on the question of the country in which they want to work, and some want to work in Russia, the United Arab Emirates, Canada, the USA, Iraq, Germany, or Australia (Fig. 11).

To achieve the set goals, students need to integrate into the educational environment and activities of Russian universities with a high level of motivation, activity, and self-organization. The results of this embedding will depend both on the individual psychological and national-cultural characteristics of all participants in the pedagogical process [5], and on the methodological system and educational and pedagogical communication of the learning process.

5 Teaching

Teachers should provide foreign students with the necessary level of Russian language proficiency, prepare them in a number of disciplines (depending on their specialty), and help them form their readiness to study in the system of a Russian university. The learning process involves adaptation to new forms of organization of the educational process adopted in Russia, i.e. didactic or academic adaptation. The first task of the teacher in this direction is to determine the specifics of the way students receive, process, and use educational information, which depends on intellectual abilities and psychophysiological characteristics, i.e. from personal factors influencing the learning process. It is also influenced by social, cultural, historical, religious traditions and national characteristics. It is necessary to take into account the specifics and not to break the stereotypes of learning habitual for foreign students. It is necessary to form the style of activity gradually, creating conditions favorable for learning through a positive attitude towards the discipline, the teacher, the group, and the learning process. The task of teaching is complicated by the tight deadlines for teaching and the need to form multinational groups. In deciding how to form groups and determine the methods and means of teaching, analysis of the entrance testing results and student surveys can help.

One of the main problems faced by teachers of modern higher education is the decrease in the level of basic training of foreign students. Another important problem is connected with the students' ignorance of the Russian language, its complexity, with the study of the disciplines of the curriculum in Russian. In the USSR, foreign students quickly improved their level of Russian language proficiency, as they were settled in a hostel separately from fellow citizens and Russian was the main language of communication [11]. Now foreign students stick together, forming small ethnic.
groups, communication within which is not in Russian, but in their native language. This slows down the learning of the Russian language [11]. This situation requires a special approach to teaching non-linguistic disciplines and great attention and mutual efforts of teachers and students in the study of the Russian language. The problem increases due to the low level of fundamental knowledge of foreign students. The exchange of professional experience and the development of specialized training programs for foreign students will help in solving methodological difficulties.

Teaching is negatively affected by absenteeism and failure to complete homework. Only about 6% of respondents regularly attend classes. 23% of respondents do not interfere with attending classes. 5% do not attend classes due to problems and illness. Other reasons why students attend classes irregularly: unusual climate, lack of sleep, difficult schedule, transport, difficult paperwork, lack of Internet, indiscipline and laziness (Fig. 12). As noted, adaptation of foreign students is accompanied by the development of stress and negative feelings against the background of a large study load, which, as a rule, does not meet the expectations of foreign students [9].

According to the answers of the respondents, they receive new knowledge in all disciplines, teachers come to the rescue if there are problems with completing assignments. 93% of students are satisfied with the training format, 4% are not, 3% did not clearly answer the question (Fig. 13). 96% of students believe that communication with teachers is going well, 3% believe that it is not good, 1% have not decided on this issue (Fig. 14).
98% of students have made up their minds about the quality of teaching disciplines: 96% are satisfied with the quality of teaching, 2% are not (Fig. 16).

90% of respondents definitely answered about the complexity of training. It is difficult to study for 34% of the respondents, for 56% it is not difficult (Fig. 17). In this case, the category of complexity is not quantitatively and qualitatively defined. What is difficult for one may be easy for another. Therefore, it is impossible to draw objective conclusions from the percentage of those who answered the question about the complexity of training.
Due to the analysis of only the students’ opinions, it is difficult to characterize all aspects of the teaching process for the study group. To do this, it would be necessary to simultaneously conduct teachers’ survey. But with further presentation of the results of the analysis, it will become clear what can be changed in teaching.

6 Learning process

The learning process for foreign students is very difficult, as it is influenced by many factors - climate, health, material security, getting used to the city, hostel, university atmosphere, learning environment, students’ relationships with each other and with teachers, self-organization, etc.

Communication is very important for the successful adaptation of students who are cut off from home, relatives, familiar living conditions. The Internet, together with gadgets, helps foreign students solve a number of external communication problems they have, which, in turn, helps them feel more confident and quickly adapt to a new life. Proficiency in IT technologies and the Internet allows students to keep in touch with family, friends, professional community; search for and receive/transmit educational materials, use translator and various services, informational, educational and scientific.

As for internal communication, namely communication with other foreign students, 7% are not satisfied, 88% are satisfied with this communication, based on the answers of 96% of respondents (Fig. 18). This shows that students in groups can easily find a common language, since mostly students in the same group are of the same age and from the same country.

When studying at the faculty, the respondents encountered difficulties (Fig. 19), which affect their educational activities. 19% of the surveyed students had no difficulties.
Fig. 18. Mosaic graph (age - education) “Are you satisfied with international communication between students”?

Fig. 19. Tag cloud “Difficulties encountered during training”?

Difficulties of a methodological and organizational nature are: overloaded schedule, long lessons, fast rate of learning, too little time for rest, not enough time to study the Russian language. Some of these problems can be solved centrally, others can be solved with the help of the experience and special pedagogical training of teachers.

Psychological and personal problems are: laziness, lack of motivation (not interesting), lack of activity (the need to make an effort), poor internet in the hostel. These problems can be solved using the actual content, multi-level organization of educational material, introducing elements of entertainment and a visual approach to the presentation of educational material, applying psychological laws [11].

Some respondents had difficulties with living in a hostel. To the question of whether the hostel suits: “yes” — 76% of respondents answered; “no” — 8%; more than 6% of respondents do not live in a hostel and 10% have not decided on the answer to this question (Fig. 20, 21).
Probably, not all respondents wrote about their problems, and they could not talk about all the difficulties. Some found it easier to overcome the problems that arose and did not point them out. For example, 35% of Chinese students, representing 32% of the respondents, had no learning difficulties. There is an opinion that students from China are less whimsical, easier to adapt to a different environment [5]. Students from neighboring countries know better the Russian language, traditions, living conditions in Russia, so their adaptation proceeded much faster and with less difficulty.

The styles of activity that students have developed while studying at home must now be adjusted. The process of their adaptation should be carried out gradually, starting with training at the preparatory faculty. As we noted, personal factors and national characteristics of students should be taken into account. And the result largely depends not only on the activity of students, but also on the skills, perseverance and professionalism of teachers. In other words, the result is determined by flexibility, mobility and the ability to customize the pedagogical system of the preparatory faculty.

Note that in many countries a 10-point system for assessing knowledge has been adopted. Students who receive grades that are familiar to us experience difficulties in determining the level of their own knowledge and make claims to teachers. Accustomed to the test form of knowledge control, students often find it difficult to perceive writing tests and oral exams. A 6-day work week, or rather classes on Saturdays, causes bewilderment among foreign students [9].
Note that the more a foreign student is active in the territory of the host community, the faster he adapts to the new environment [7]. For successful adaptation, not only educational activities are important, but also extracurricular activity of foreign students. For example, participation in competitions, conferences, circles, communities. In addition, this work also has educational value.

From the point of view of students’ emotional-psychological condition, relationships with the city are important. 78% of respondents like the city in which they study at the preparatory faculty (Fig. 22). 53% of respondents have enough time to get acquainted with the city, visiting its sights, 25%—not enough, the rest study remotely (Fig. 23).

Fig. 22. Tag cloud “Do you like the city where you study at the preparatory faculty”

Fig. 23. Tag cloud “Do you have enough time to visit the sights of the city?”

In general, for the majority of respondents, the conditions for education created at the Preparatory Faculty are favorable. But as we can see, there are also problems that affect the results and duration of the adaptation period, increasing it from six months to a year or more [12].

7 How to improve readiness formation

The answer to the question of what factors are more significant for adaptation and the formation of readiness, what problems and how to deal with, we will borrow from the respondents. After all, the success of adaptation depends on the ability of the environment to take into account the interests and needs of a particular student.
18% of respondents believe that the learning process does not need to be improved, since everything is fine; 10% were undecided on the answer to the question “What (in your opinion) will improve education?”. The rest of the respondents recommend reducing the duration of the lesson, the teacher to explain more slowly, introduce more practice (10%), students to make efforts (7%) and work in class (6%), organize effective teacher-student communication (6%), use good textbooks (4%), choose the style of learning and communication for better memorization (4%), study more disciplines of the Russian language (3%), increase the number of Russian language lessons (3%), make classes more interesting (2%) (Fig. 24).

As has been noted more than once, the main problem of foreign students is the language barrier. Increasing the number of languages to communicate in the learning process, according to respondents, will allow to reduce problems due to language, for example, teachers to understand at least five foreign languages. They also propose to increase the number of language disciplines, increase the number of hours for studying the Russian language, and organize additional courses in the Russian language. And also to make teaching the Russian language more effective, for example, by using a dictionary with pictures, increasing practice, conducting interesting classes, communicating with Russian students in Russian, increasing learning motivation, and tightening control over class attendance. It should be noted that according to the results of Russian students’ survey, presented by E. B. Popkova, there is a low degree of contacts intensity between Russian and foreign students, which negatively affects the adaptation of foreign students [13].
The following measures will improve living conditions in the hostel: fewer people living in the room and the selection of neighbors, individual bathrooms, showers, kitchens; air conditioning and access to a washing machine; good internet; support group for foreign students in the hostel; mutual respect and order; cultural integration and interaction (Fig. 25). Improving living conditions, in our opinion, can help reduce health problems due to the unusual climate. This is possible due to the improvement of the physical condition due to the possibility of rest in silence, physical and psychological relaxation.

The solution to financial problems 3% of foreign students see in the presence of a good job, which they will combine with their studies, and a reduction in tuition fees (2%). Respondents noted that some problems will be solved if there is a visa for more than one year.

8 Model of the pedagogical system for the successful formation of readiness

78% of respondents would like to continue their studies at the main faculties of the university, where they study at the preparatory faculty, 8% did not want to, and 14% did not decide on an answer to this question.

37% of the surveyed students plan to stay in Russia after their studies, 35% do not want to stay in Russia, 28% have not decided on an answer (Fig. 26, 27).

Fig. 26. Mosaic graph (age-gender) "Are you planning to stay in Russia after your studies?"
If we take into account not only the attractiveness of the cost and the quality of education in Russia, then from the opinion of the respondents it can be understood that there are certain successes in preparing foreign students to continue their education in Russia. It is necessary to make the preparation process as effective as possible in terms of increasing the number of students and developing qualities that would serve their further successful education to a greater extent.

Based on the analysis of the results of foreign students’ survey, we will build a model of the pedagogical system, in which we will determine the factors influencing the formation of the readiness of foreign citizens to study a specialty at a Russian university.
9 Conclusions

Education of foreign students at the preparatory faculty is an important and difficult stage, during which the readiness to study a specialty in Russian is formed. Readiness is classified by type: communicative, everyday, linguistic, value, psychological, etc. It can be emphasized that readiness is expressed in knowledge of the Russian language, knowledge and understanding of special terms and definitions of disciplines that are important for obtaining a future specialty, in the formation of motivation, activity and ways of activity and communication that make up the means of learning in the new educational and pedagogical environment. Factors of psychological, social, pedagogical and temporal nature affect the learning process and determine the formation of readiness. The degree of readiness formation depends on how problematic the factors are, how many obstacles and difficulties they introduce into the learning process, on the one hand. On the other hand, how active are the students and how does the pedagogical system help to overcome difficulties. Adaptation agents play a special role in this matter. These are the people, groups, organizations that help to get used to the new community, provide the necessary support and information, and help establish social contacts [12]. The main adaptation agents are the dean's office, teachers, students' group, compatriots, and other foreign students [12]. By solving problems, it is possible to influence the formation of readiness and the success of the learning process, which will serve to improve the quality of professional training of foreign students.

In the study, using a systematic approach to describe the learning process and based on studying the opinions of the students themselves, the factors and related problems that influence the formation of the readiness of foreign students to study a specialty in Russian are described. As a result, not only recommendations for a specific educational process were obtained, but also a model was presented, on the basis of which it is possible to assess the factors and identify problems that affect the formation of the readiness of foreign students to study in Russia for any other conditions. It can be said that the technology for analyzing the process of pre-university training of foreign students has been proposed. This technology can be improved by adding an analysis of the opinion of the teaching staff.

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