

2020, том 10, № 4

http://sciforedu.ru

ISSN 2658-6762

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DOI: 10.15293/2658-6762.2004.01

УДК 378.096

Исследование готовности студентов педагогических специальностей к преподаванию на английском языке

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Проблема и цель. Исследование посвящено проблеме формирования системы трехъязычного образования в условиях модернизации образования Республики Казахстан. Цель исследования: определение особенностей формирования готовности студентов педагогических специальностей преподавать на английском языке в профессиональной деятельности.

Методология. Методологическую основу исследования составил системно-деятельностный подход. В ходе исследования систематизированы научно-теоретические источники по проблеме формирования готовности студентов педагогических специальностей преподавать на английском языке в профессиональной деятельности, проанализирован и обобщен эмпирический материал, полученный по итогам анкетирования и тестирования студентов выпускных курсов педагогических специальностей Карагандинского университета имени Е. А. Букетова. Анализ результатов исследования проводился с применением методов математической статистики.

Результаты. Авторами исследования выделены критерии и показатели сформированности готовности студентов педагогических специальностей к преподаванию на английском языке в профессиональной деятельности на основе ее компонентного состава. Согласно когнитивному компоненту готовности определены уровни знания и владения английским языком студентов педагогических специальностей. В соответствии с праксиологическим компонентом

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2020, том 10, № 4

http://sciforedu.ru

ISSN 2658-6762

определены показатели формирования готовности выпускников преподавать на английском языке в профессиональной деятельности. Согласно мотивационному компоненту определены степень устойчивости интереса, характер отношения и степень соответствия видов мотивации выпускников к преподаванию на английском языке. Особенностью формирования готовности студентов выпускных курсов педагогических специальностей к преподаванию на английском языке является низкая мотивация и недостаточная профессиональная и методическая готовность к преподаванию на английском языке в профессиональной деятельности при достаточном уровне владения английским языком.

Заключение. Анализ результатов проведенного исследования позволил выявить особенности и степень готовности студентов выпускных курсов педагогических специальностей к преподаванию на английском языке. Уровень готовности студентов выпускных курсов педагогических специальностей к преподаванию на английском языке определен как недостаточный, в разрезе компонентов: когнитивный – от среднего к высшему; праксиологический – преимущественно низкий; мотивационный – от низкого к среднему.

Ключевые слова: система трехъязычного образования; студенты педагогических специальностей; профессиональная деятельность; готовность преподавать на английском языке; профессиональная готовность; компоненты готовности; показатели готовности.

СПИСОК ЛИТЕРАТУРЫ

- 1. Невиннова Е. А., Оноприенко Н. А., Аязбекова Б. К. Языки и трехъязычное образование: к проблеме развития трехъязычного образования в Казахстане // Актуальные проблемы филологии и методики преподавания иностранных языков. 2017. № 11. С. 219–222. URL: https://www.elibrary.ru/item.asp?id=29196768
- 2. Жетписбаева Б. А., Сырымбетова Л. С., Кубеева А. Е. К вопросу подготовки педагогов для многоязычного образования в Казахстане // Актуальные проблемы филологии и методики преподавания иностранных языков. 2017. № 11. С. 168–172. URL: https://www.elibrary.ru/item.asp?id=29196750
- 3. Jeon M. Native-English speaking teachers' experiences in East-Asian language programs // System. 2020. Vol. 88. P. 102178. DOI: https://doi.org/10.1016/j.system.2019.102178
- 4. Мележик К. А. Языковая политика и языковая реальность интернационализации университетского сообщества // Политическая лингвистика. – 2016. – № 1. – С. 151–158. URL: https://www.elibrary.ru/item.asp?id=25718842
- Christiansen P. V. Language policy in the European Union: European /English/Elite/Equal /Esperanto Union? // Language Problems and Language Planning. – 2006. – Vol. 30(1). – P. 21–44. DOI: https://doi.org/10.1075/lplp.30.1.03chr
- Vega-Mendoza M., West H., Sorace A., Bak T. H. The impact of late, non-balanced bilingualism on cognitive performance // Cognition. – 2015. – Vol. 137. – P. 40–46. DOI: https://doi.org/10.1016/j.cognition.2014.12.008
- Колос Е. А. Проблемы реализации в системе образования Казахстана программ полиязычия // Экономическое развитие региона: управление, инновации, подготовка кадров. – 2017. – № 4. – С. 150–155. URL: https://www.elibrary.ru/item.asp?id=30459816
- Lee H. H., Lin Kim G. M., Chan L. L. Good teaching: What matters to university students // Asia Pacific Journal of Education. – 2015. – Vol. 35 (1). – P. 98–110. DOI: https://doi.org/10.1080/02188791.2013.860008

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http://sciforedu.ru

ISSN 2658-6762

- 9. Banos R., Baena-Extremera A., Ortiz-Camacho M. del M. Prediction of the satisfaction with the student life, based on teaching competence and satisfaction with the school // Frontiers in Psychology. 2019. Vol. 10. P. 2506. DOI: https://doi.org/10.3389/fpsyg.2019.02506
- 10. Ertmer P. A. Teacher pedagogical beliefs: The final frontier in our quest for technology integration?
 // Educational Technology Research and Development. 2005. Vol. 53. P. 25–39. DOI: http://dx.doi.org/10.1007/BF02504683
- 11. Constantino G. D. Educational Technology and Teacher Education: Barriers and Gates in South America // Creative Education. 2014. Vol. 5 (12). P. 1080–1085. DOI: https://doi.org/10.4236/ce.2014.512122
- Ahmad A. Globalization of Science and Technology through Research and Development // Open Journal of Social Sciences. – 2014. – Vol. 2 (4). – P. 283–287. DOI: https://doi.org/10.4236/jss.2014.24031
- Abukhattala I. The use of technology in language classrooms in Libya // International Journal of Social Science and Humanity. – 2016. – Vol. 6 (4). – P. 262–267. DOI: https://doi.org/10.7763/IJSSH.2016.V6.655
- Hashmi N. A. Computer-Assisted Language Learning (CALL) in the EFL Classroom and its Impact on Effective Teaching-learning Process in Saudi Arabia // International Journal of Applied Linguistics and English Literature. – 2016. – Vol. 5 (2). – P. 202–206. DOI: https://doi.org/10.7575/aiac.ijalel.v.5n.2p.202
- 15. Padmavathi M. A Study of Student-Teachers' Readiness to Use Computers in Teaching: An Empirical Study // Journal on School Educational Technology. 2016. Vol. 11 (3). P. 29–39. DOI: https://doi.org/10.26634/jsch.11.3.4788
- Shin S.-J., Chang K. Integrating technology to facilitate critical reflection and creativity in preservice teacher development // International Journal of Knowledge and Learning. – 2016. – Vol. 11 (2/3). – P. 166–177. DOI: https://doi.org/10.1504/IJKL.2016.079756
- 17. Везиров Т. Г. Подготовка магистров педагогического образования с использованием Интернет и сервисов Web 2.0 в обучении иностранным языкам // Актуальные проблемы филологии и методики преподавания иностранных языков. 2020. Т. 14. С. 134–137. URL: https://www.elibrary.ru/item.asp?id=42690232
- Mingazheva E. A. Interactive briefing as one of the forms of control of mastering communicative foreign language competence of students at the university by means of self education // Topical Issues of Philology and Methods of Foreign Language Teaching. – 2020. – Vol. 14. – P. 178–182. URL: https://www.elibrary.ru/item.asp?id=42690242
- Cai M. Professional Self-Development Based on Informal Learning: A Case Study of Foreign Language Teachers in a University of China // Open Journal of Social Sciences. 2019. Vol. 7 (12).
 P. 26–38. DOI: https://doi.org/10.4236/jss.2019.712003
- Zhankina B. Z., Kostina E. A., Zhetpisbayeva B. A., Kargin S. T. Basic factors of developing learner autonomy in foreign language education (with the main focus on Kazakhstan) // Science for Education Today. – 2019. – Vol. 9 (2). – P. 126–139. DOI: http://dx.doi.org/10.15293/2658-6762.1902.09
- Oliveira Santos R. R., Nunes Vieira J., Souza Ribeiro M. S., Lourenço da Silva C. M., Lasalvia V. C., de Santana Padilha Neto A. A Professional Teacher Work Agenda Teaching in Higher Education // Creative Education. 2019. Vol. 10 (7). P. 1383–1399. DOI: https://doi.org/10.4236/ce.2019.107103
- 22. Sozer E. M., Zeybekoglu Z., Alayli A. Examining graduate teaching assistants' conceptions of and readiness for effective teaching in a non-profit Turkish university // Innovations in Education and



2020, том 10, № 4 http://sciforedu.ru

ISSN 2658-6762

Teaching International. – 2019. – Vol. 56 (3). – P. 373–384. DOI: https://doi.org/10.1080/14703297.2018.1453369

- Tazhigulova G. O., Assanova D. N., Uteubaeva E. A., Mekezhanova A. B., Tleuzhanova G. K. Conditions of English language teaching to prospective biology teachers in Kazakhstan // Novosibirsk State Pedagogical University Bulletin. – 2018. – Vol. 8 (6). – P. 23–40. DOI: http://dx.doi.org/10.15293/2226-3365.1806.02
- 24. Boei F., Dengerink J., Geursen J., Kools Q., Koster B., Lunenberg M., Willemse M. Supporting the professional development of teacher educators in a productive way // Journal of Education for Teaching. 2015. Vol. 41 (4). P. 351–368. DOI: https://doi.org/10.1080/02607476.2015.1080403





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ISSN 2658-6762

DOI: 10.15293/2658-6762.2004.01

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Research of readiness of pedagogical specialties students to teach in English

Abstract

Introduction. The research is devoted to the problem of the trilingual education system formation in the context of educational modernization in the Republic of Kazakhstan. The purpose of the research: to determine the features of forming the readiness of pedagogical specialties students to teach in English in their professional activities.





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Materials and Methods. The methodological basis of the research was a system-activity approach. In the course of the research, scientific and theoretical sources on the problem of forming the readiness of pedagogical specialties students to teach in English in their professional activities were systematized, the empirical material was obtained from the results of questioning and testing of graduate pedagogical specialties students of Academician E. A. Buketov Karaganda University. The analysis of the research results was carried out using the methods of mathematical statistics.

Results. The authors of the research singled out the criteria and indicators of the formation of the readiness of pedagogical specialties students for teaching in English in their professional activity based on its component structure. According to the cognitive component of readiness, the levels of knowledge and proficiency in the English of pedagogical specialties students have been determined. In accordance with the praxeological component, indicators of the formation of graduates' readiness to teach in English in their professional activities have been determined. According to the motivational component, the degree of stable interest, the attitude nature and the correspondence degree of the motivation types of graduates to teaching in English have been determined.

Conclusions. The analysis of the research results made it possible to identify the features and the readiness degree of pedagogical specialties graduate students to teach in English. The readiness level of pedagogical specialties graduate students to teach in English is defined as insufficient, in terms of components: cognitive – from secondary to higher; praxeological – mostly low; motivational – low to medium. The feature of forming the readiness of pedagogical specialties graduate students to teach in English is low motivation and insufficient professional and methodological readiness to teach in English in professional activities with a sufficient level of English proficiency.

Keywords

Trilingual education system; Pedagogical specialties students; Professional activity; Willingness to teach in English; Professional readiness; Readiness components; Readiness indicators.

Introduction

Improvement of the education system in the Republic of Kazakhstan plays an important role in the global competitiveness of the country, being the central link in the new model of economic growth. At the same time, Kazakhstan needs a radical modernization of education, which lies in the integration of general secondary and higher education that should become a platform for the country's future economic, political and sociocultural prosperity. In this regard, trilingual education as a key factor in modernization processes has become one of the state priorities.

To ensure the country's competitiveness, Head of State N. A. Nazarbayev in his Address to develop Kazakh as the state language, Russian as the language of interethnic communication and English as the language of successful integration into the world economy. For over the years of implementing the Address, there have been a certain success in this direction; the need to train trilingual teaching staff has been recognized as the first and most important step in the development of a multilingual culture of society. However, in practice the expectations turned out largely overestimated. This gave rise to a certain

the people of Kazakhstan "New Kazakhstan in the

New World"¹ proposed to start a phased

implementation of the unique cultural project

"Trinity of Languages", the essence of which is to

Acts of the Republic of Kazakhstan: Adilet. URL: http://www.adilet.gov.kz/ru/node/7507

¹ Address of the President of the Republic of Kazakhstan N. Nazarbayev to the People of Kazakhstan from January 28, 2007 New Kazakhstan in the New World (In Russian). *Information and Legal System of Regulatory Legal*



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skepticism in the professional community; some linguistic scholars believe that the idea of introducing trilingual education is somewhat premature. Teaching in different languages, in their opinion, cannot be effective if teachers do not speak the languages themselves at the proper level, are not familiar with the theory and practice of teaching, and are not supplied with high quality teaching materials [1, p. 221].

At the same time, the accumulated experience led to the understanding that the transition to the trilingual education is a complex and non-linear process. It involves not only revision of the curricula and programs. The most pressing issue is training of teaching staff. In general, the formation of the ability of Kazakhstani teachers to innovate still remains a systemic problem [2, p. 169].

Difficulties in achieving the target indicators of the multilingual education program stimulated scientific research, study and adaptation of foreign experience, in order to create a model of trilingual education in Kazakhstan.

First of all, the intensive search for effective educational strategies of teaching English is largely due to the lack of an appropriate language environment in Kazakhstan, in contrast to the Kazakh and Russian languages, as well as the high demand for English as a necessary condition for the internationalization of the economy, intercultural and professional communication.

For instance, Korean scientists, analyzing the process of teaching English in Asia, pay attention to transnationalism and the global spread of the English language (M. Jeon [3]). Russian and foreign researchers agree that in the process of internationalization of higher education, which is its integration into the international economy and infrastructure, English serves as a universal contact tool for this process² [4].

Western European scholars come to the conclusion that, based on the trilingual model, it is possible to maintain identity through teaching in the mother tongue, and through carefully planned and well-organized education to enable the acquisition of at least one more language (P. V. Christiansen [5], M. Vega-Mendoza, H. West, A. Sorace, T. H. Bak [6]).

The result of the awareness of multilingual education is the introduction of various methodological projects by the scientific and pedagogical community and the development of the basic principles of student-centered learning [7].

Modern educational institutions continue searching for ways to build an integral system for training a specialist that meets the requirements of the professional standard of a teacher who knows teaching methods and a foreign language, and is able to effectively apply knowledge and skills in their subject activity.

The research paradigm is very broad and largely depends on the traditions of the educational environment, infrastructure, economic vectors and foreign policy guidelines of states, but one can trace the commonality of the approaches of scientists from different countries in search of effective tools for pedagogical training.

The student-centered approach can rightfully be considered one of the leading educational trends in recent decades. Thus, Singaporean scientists H. H. Lee, G. M. Lin Kim, L. L. Chan [8], put forward the assessment of teaching by students as a basic criterion for the preparation of an effective teacher. In their



² Rasskazova T. P., Verbitskaya N. O., Guzikova M. O. Language educational policy of a Russian university in the context of global internationalization: experience of

systemic and structural solutions. *Modern Science: Actual Problems of Theory and Practice*, 2015, no. 9–10, p. 68. (In Russian)



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opinion, this will allow educational institutions to adequately respond to the requests of students.

The most rational item, in our opinion, in such an approach is the development by students of the most important characteristics of the quality of teaching, such as preparation and organization, knowledge, learning and thinking, enthusiasm and dedication. This research is potentially useful for teachers: knowing the teaching characteristics that matter to students can help teachers determine for themselves how to maintain and improve their teaching performance [8].

Spanish scientists R. Banos, A. Baena-Extremera, M. D. M. Ortiz-Camacho also focused on students in the study of professional personal competence of teachers. The correlation between the level of a teacher's competence and the level of satisfaction with their life and the life of their students is very interesting [9].

High adaptability of the educational environment, unhindered access of students to information, teaching aids, the possibility of presenting educational material, remote communication, the impact of computer technologies on the organization and content of the educational process have become the subject of scientific research by scientists from almost all the countries. Available studies show that nowadays scientists pay great attention to educational technologies in the process of teacher training (R. Banos, A. Baena-Extremera, M. del M. Ortiz-Camacho [10], P. A. Ertmer [11], G. D. Constantino [12]), computer and Internet technologies in the process of language learning (I. Abukhattala [13], N. A. Hashmi [14], M. Padmavathi [15]).

In general, according to the researchers, non-traditional forms of education contribute to the development of students' creative thinking (S.-J. Shin, K. Chang [16]), reveal their ability to work independently, thus implementing the idea of self-education of students in the process of professional training³ [17; 18].

In a changing educational environment, teachers should be prepared to develop professionally throughout their lives. M. Cai in his study points to changes in the informal learning activities of teachers in the new era of the Internet and new technologies, characterized by the use of online learning resources, online learning communities and mobile phones. Teachers' awareness and autonomy play a crucial role in their education and professional development [19; 20].

Brazilian researchers R. Santos, J. Vieira adhere to the same opinion; they come to the conclusion that one of the problems of professionalization is the need to implement a policy of lifelong learning, which includes the principle of critical understanding of educational processes in the system of higher education [21].

Turkish scientists E. M. Sozer, Z. Zeybekoglu, A. Alayli also confirm that effective teaching requires the creation of effective training and practice programs for intending teachers [22].

Thus, the wide geography and multidimensionality of research in the issue of training intending teachers to teach in English in their professional activities indicates not only the urgency of this problem, but also the impossibility of using a universal approach to its solution.

The purpose of this research is to determine the features of the formation of the readiness of students of pedagogical specialties students to teach in English in their professional activities in

³ Ovcharenko V. A. Self-education and creative development of personality in the process of professional training of a student. *Bulletin of the Association of Universities of*

Tourism and Service, 2011, no. 1, pp. 63–67. (In Russian) URL: https://www.elibrary.ru/item.asp?id=15590389



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the context of modernization of education in the Republic of Kazakhstan.

Materials and Methods

Specific directions for the implementation of the tasks set by the President of Kazakhstan for implementation and development the of multilingualism were reflected in the State Program for the Development of Education and Science in the Republic of Kazakhstan for 2011- 2020^4 , the activities of the Ministry of Education and the higher education system which searched and developed the most optimal models of language education, nationally standardizing and providing a conceptual platform for the implementation of the cultural project "Trinity of Languages" as a program document of the state language policy.

Within the implementation of the State Program for the Development of Education and Science in the Republic of Kazakhstan for 2020– 2025 ⁵, a systematic transition to training in Kazakh, Russian and English is being carried out.

For the transition to training in the three languages, four subjects of the natural mathematical cycle were determined, in which training will be conducted in English: physics, chemistry, biology, computer science.

The strategic objectives of trilingual education in Kazakhstan actualized the need to prepare students of pedagogical specialties to teach in English in their professional activity in the context of the modernization of education in the Republic of Kazakhstan. So, since 2017, the step-by-step introduction of trilingual education has been launched in the secondary education system. Of the approximately 800 schools that claimed to switch to teaching four subjects of the natural mathematical cycle in English, 153 schools were selected to work in this direction in a pilot mode. The main criteria for the selection of schools were: 1) the availability of these subjects teachers who speak English at levels B1–B2; 2) the availability of training resources.

The system-activity approach, which was the methodological basis of the study, allowed the readiness considering pedagogical of specialties students to teach in English in their professional activity as a complex integrative education in the unity of its components. To research the readiness of pedagogical specialties students to teach in English in their professional activities, we have chosen empirical methods of testing and interviewing students of multilingual groups of graduate courses of specialties Computer science (5B011200), Chemistry (5B011200), Biology (5B011300), Physics (5B011400) of the faculties of mathematics and information technology, chemistry, biological-geographical, and physicaltechnical faculties of Academician E. A. Buketov Karaganda University. A total of 60 students took part in the research, including 15 students studying their major Computer Science (5B011200), 15 - Chemistry (5B011200), 15 -Biology (5B011300), 15 – Physics (5B011400).

The sample of respondents is explained by the fact that in the Karaganda region only one higher educational institution (Academician E. A. Buketov Karaganda University) trains students of the above pedagogical specialties. At the same time, the number of the 4-year students in these specialties is 77 people. Due to

⁴ State program for the development of education and science in the Republic of Kazakhstan for 2011–2020. *Information and Legal System of Regulatory Legal Acts of the Republic of Kazakhstan: Adilet.* (In Russian) URL: http://adilet.zan.kz/rus/docs/U1000001118

⁵ State program for the development of education for 2020-2025. Information and Legal System of Regulatory Legal Acts of the Republic of Kazakhstan: Adilet. (In Russian) URL: http://adilet.zan.kz/rus/docs/P1900000988



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these facts, it was decided to use the method of directed (target) proportional sampling, which consists in an equal representation of graduates of each specialty.

To determine the knowledge and levels of the English proficiency among graduate students, a test was carried out on four types of speech activity in accordance with the system of levels of foreign language proficiency of the project "Common European Framework of Reference for Languages".

A survey was chosen as a method for measuring the level of formation of skills and abilities of pedagogical specialties students to teach in English in their professional activities.

To determine the degree of stability of interest, the nature of the attitude and the prevalence of types of motivation for the use of English in professional activities, a questionnaire was conducted based on the methodology "Studying the motives of students' educational activities" developed by A. A. Rean and V. A. Yakunin⁶ and the methods of identifying types of motivation for learning a foreign language, developed by E. I. Passov and A. N. Shchukin⁷. These methods, to one degree or another, reflect all the types of motivation we have identified for educational, professional activities, interest and attitude towards teaching in English in professional activities.

Results

Thus, the analysis of psychological and pedagogical research on the structure of readiness for professional activity shows that most scientists distinguish three main components of readiness for professionally oriented communication in a foreign language: motivational (motives, interests), cognitive (foreign language knowledge) and operational (skills).

The distinguished components of the structure of the concept of readiness to teach in English in professional activities give us the reason to single out three components of readiness: *motivational, cognitive and praxeological.*

The cognitive component reflects the degree of theoretical readiness to teach in English in professional activity. Preparation should cover two areas:

1. professional and communicative (development of language knowledge that represents the relevant field of professional activity through the integration of the discipline "Professionally oriented foreign language" in the general course of vocational training);

2. professional and intercultural (knowledge of the national characteristics of the native and foreign language culture, speech and social norms in the process of professional interaction).

The *praxeological* component of readiness to teach in English in professional activity characterizes the practical readiness of students to teach in English in their professional activity. The selection of this component is governed by the fact that the knowledge acquiring is inextricably linked with their application in practice and the formation of foreign language skills, which forms the basis of students' practical training for communication in their professional field. We divide all the skills that are part of the praxeological component into three groups: linguistic, sociolinguistic and professionalcommunicative:

⁶ Bordovskaya N. V. *Pedagogy: Textbook for universities*.
St. Petersburg: Piblishing House Piter, 2000, 304 p. (In Russian)

⁷ Shchukin A. N. *Teaching foreign languages: theory and practice: a manual for teachers and students.* Moscow: Filomatis, 2007, 475 p. (In Russian)

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1. linguistic skills include: the ability to use the language system for communication purposes; the ability to recognize the meaning of the selected grammatical units; the ability to recognize basic syntactic relationships between the words and larger components of the sentence structure; the ability to analyze syntactic relationships between the words and larger components of the sentence structure; the ability to use grammatical words; the ability to use professional terminology;

2. sociolinguistic skills include the ability to understand and adequately use the knowledge of the cultural characteristics of native speakers, their habits, traditions, norms of behavior and etiquette; the ability to use proper language forms and means depending on the purpose and situation in the communication process, while remaining the bearer of a different culture;

communicative skills 3. professional involve communicative skills in a foreign language in the professional sphere, the ability to read and understand completely or mainly the content of simple authentic texts of different genres and types; the ability to verbally carry out dialogical communication within the framework the everyday, professional of sphere of communication: the ability to join communication, support, complete, leave it, minimize the conversation; the ability to work effectively with professional-oriented information of a foreign language, to build a strategic line of behavior.

The *motivational component* characterizes the degree of moral and psychological readiness of the student to teach in English in their professional activity. It reflects the degree of formation of interest and motives for this type of professional activity, in our case, a professional interest in studying and using knowledge and communication skills in a foreign language in their intending professional activity. The interest in learning and using knowledge and communication skills in a foreign language is also expressed in a positive emotional attitude to this type of activity, to the culture of the peoples of this language; the desire to learn a foreign language culture in order to master communication skills with representatives of another nation, self-improvement and selfdevelopment in this subject area, the formation of a set of motives, including communicative, pragmatic and cognitive ones.

The interest in the profession and the English language learning, satisfaction with the results of mastering communication skills are the necessary conditions for the formation of readiness to teach in English in professional activity and contribute to increasing students' activity in this educational process.

Thus, in the readiness structure of students of pedagogical specialties students, we have identified three components: cognitive, praxeological and motivational, the formation and interconnection of which ensures the efficient use English professional activities. of in The cognitive component constitutes the theoretical basis of knowledge for the development of practical skills and their application in the field of teaching skills in English in professional activities. The praxeological component contributes to the improvement of the skills of teaching in English in professional activity and reflects the degree of students' practical readiness to teach in English in their professional activity. The motivational component is a prerequisite for the formation of this readiness and ensures its integrity.

Based on the analysis of the definitions of the concepts of "readiness" and "readiness for professional activity" available in the psychological and pedagogical literature, we can give a definition.



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The readiness of students of pedagogical specialties to teach in English in their professional activity is an integrative personal education, which includes linguistic, sociolinguistic, professional and communicative knowledge, skills and positive motivation necessary for the successful use of English in professional activity.

Graduates of pedagogical specialties are required to have sufficiently free and professionally directed knowledge of the English language, which means that a high level of formation of students' readiness to teach in English in their professional activity is assumed. Our research has shown that not all the students of pedagogical specialties are fully fluent in English as a means of professional communication.

This conclusion was made on the basis of testing and questioning the students of multilingual undergraduate groups of Academician E. A. Buketov Karaganda State University, a regional higher educational institution which provides the region with teaching staff.

To begin with, we tested the readiness of undergraduates for the *cognitive component, the indicators* of which are: the knowledge of the language system and knowledge of various aspects of the English language for the correct formation and understanding of the statement as an act of communicative activity. Based on it, *three levels of students' readiness* to teach in English in professional activity have been identified: *high, medium, low*.

High level – the student has complete, conscious linguistic, sociolinguistic, professional and communicative knowledge. This level is expressed in the students' need for the constant and systematic implementation of intellectual, communicative, linguistic tasks; ability to quickly and without loss of activity switch from one type of activity to another; ability to independently analyze, generalize, make conclusions, complete

tasks in the allocated time with high productivity – 100 %; ability to accurately express their your point of view; enter the communication in English psychologically correctly and competently continue it; ability to take the initiative; ability to express emotions as a means of communication. Students prefer creative tasks, are able to plan and make statements; formulate questions; speak expressively and holistically; are fluent in the grammatical and syntactic structures of the English language, are able to express their thoughts logically.

Medium level – the student possesses quite complete, conscious linguistic, sociolinguistic, professional and communicative knowledge. The average level reflects the desire of students to perform communicative linguistic tasks, the periodic need for communication in English, especially on the topics covered. This level is characterized by the sufficient knowledge of the operations of analysis synthesis, and generalization; the ability to partially switch from intellectual to communicative linguistic tasks. Students have developed the ability to correctly and situationally enter the communication in English, but there is no ability to competently maintain communication. The linguistic tasks are carried out with a productivity of 70 % of the planned volume. Students are characterized by the assimilation of a limited number of foreign vocabulary, a satisfactory level of proficiency in the grammatical structures of the English language and the logic of the expression of thoughts.

Low level – the student possesses separate, incomplete linguistic, sociolinguistic, professional and communicative knowledge. The low level is characterized by the lack of students' desire to perform linguistic tasks, passivity in the classroom, preference to perform linguistic tasks of a reproductive type, unwillingness to enter the communication with the teacher and other students in English. This



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level is expressed in low students' productivity – less than 50 % of the planned volume. Students have poorly developed correctness, consistency and accuracy of speech; their active vocabulary is poor; the level of knowledge of the grammatical and lexical means of the English language is low as well as the logic of the expression of thoughts.

In general, the analysis of the results of the questionnaire conducted among undergraduate students of pedagogical specialties allowed us to

make the following conclusion: the students of specialty Biology (5B011300) have a low level of formation of the cognitive component of the readiness. The students of specialty Physics (5B011400) have an average level, and only the students of specialties Computer Science (5B011200) and Chemistry (5B011200) know English at a high professional level (Table 1, Figure 1).

Table 1

Specialty (Major)	Speaking	Listening	Reading	Writing
Chemistry (5B011200)	90 %	90 %	95 %	90 %
Computer Science (5B011200)	65 %	70 %	75 %	68 %
Physics (5B011400)	50 %	70 %	85 %	60 %
Biology (5B011300)	40 %	56 %	50 %	40 %





Fig. 1. Levels of formation of the cognitive component of the readiness of pedagogical specialties students to teach in English in their professional activity

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The next important component of the readiness of pedagogical specialties students to teach in English in their professional activity is *praxeological*. Determining the level of formation of the component of readiness implies highlighting such indicators as the degree of proficiency in the skills of teaching in English in

professional activity and reflects the practical side of students' proficiency, namely: the degree of independence in performing actions in various situations; correctness and quality of statements. The praxeological component corresponds to the *three levels of the readiness* of students of pedagogical specialties students to teach in



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English in their professional activities: *high, medium, low.*

High level – the student independently chooses a system of actions in situations of communication in English in professional activity, transfers them to other types of activities; correctly operates with the language means.

Medium level – the student performs actions according to the model, with or without the help of a teacher transfers them to other activities; uses the language tools with minor errors.

Low level – the student reproduces the model actions with the help of the teacher; misuses the language tools.

Questioning was chosen as a method of measuring the level of formation of skills of readiness of pedagogical specialties students to teach in English in their professional activity.

Students were offered a questionnaire of 4 questions in order to test their readiness to teach in English in their professional activity. The questions were aimed at elucidating the students' opinions on whether basic knowledge of English affects the improvement of the language skills when studying specialized disciplines; whether it is necessary to conduct the selection of the first-year students in multilingual groups according to the level of their English knowledge; what difficulties students experience in studying specialized disciplines in English; whether students will be able to conduct classes in English after graduation.

The analysis of the answers to question No. 1 showed that 100 % of the respondents are confident that the basic knowledge of English affects improving language skills while studying specialized disciplines. 98 % of the respondents expressed confidence in the need to select the firstyear students in multilingual groups according to the level of their English knowledge (question No. 2). When determining the difficulties that students encounter when studying specialized disciplines in English, 48 % of the respondents noted the problems with the English grammar, and the remaining 52 % noted a weak vocabulary (question No. 3). When asked about their readiness to conduct classes in English after graduation, 24 % expressed their unpreparedness, 56 % of students expressed doubt that they would be able to teach the disciplines in English at school, and only 20 % of respondents were confident in their abilities and readiness to teach specialized subjects in English (question No. 4).

The analysis of the level of formation of the skills to teach in English in intending professional activity showed that the majority of students have a low and medium level of formation of these skills (Figure 2).







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The next component, which includes the characterization of the motivation of students' activity in the process of forming the readiness, attitude and professional interest in this type of activity, is motivational. Since the process of forming the readiness of pedagogical specialties students to teach in English in their professional activity involves the unity of the motivational and praxeological components, we need to form positive motives, interest in the study of the subject, as well as development of a positive attitude towards the implementation of communication activities.

Based on our research and taking into account the characteristics of the motives proposed in pedagogy, linguodidactics, and also, considering the specifics of the process we are studying, we identified the following motives for characterizing the motivation of students in the preparation process: communicative (includes the interest in communication during the lesson, a foreign language serves as a means of satisfying extracurricular interests); social (includes respect for teachers and fellow students, the desire to avoid condemnation from parents and fellow students for poor learning); pragmatic (includes professional motives, willingness to become a highly qualified specialist); cognitive (interest in the content of the subject, the form of organization of classes and teaching methods, interest in learning new things).

The analysis of the motives for the formation of readiness to teach in English in professional activity has shown that in the general classification of motives at the initial stage of the experiment, the most common are social motives – 35 %, cognitive – 28 %, communicative – 15 %, pragmatic ones are much less – 22 % (Figure 3).



Fig. 3. Analysis of the motives for readiness of students of pedagogical specialties to teach in English in professional activity

We believe that such results are explained by the fact that the students do not fully understand the importance of English in their intending professional sphere, they do not see the possibility of applying this knowledge to improve their professional level. An equally important criterion in identifying the level of readiness to teach in English in professional activity may be the degree of formation of the student's attitude to communication in English in professional sphere. In the process of vocational training, students can show both positive and negative attitude towards



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this type of activity. The type of attitude affects the activity of students in learning and characterizes the degree of interest of intending specialists in communicating in a foreign language in their professional activity [23].

Interest is an important indicator of a person's positive attitude to activities, including educational one [24]. The degree of interest formation serves as a criterion for the level of readiness we are studying. Regarding our problem, we are interested in the professional component of teaching in English by students of pedagogical specialties. The degree of development of positive motivation and the stability of interest, a characteristic of the attitude to learning a foreign language and the character of participation can serve as the indicators of the motivational component, i.e. all the activities in the process of preparing to teach in English in professional activity.

Based on the results of the questionnaire, we have identified *three levels of formation of the readiness* of pedagogical specialties students to teach in English in their professional activity according to the motivational component: *high*, *medium and low*.

High level – the student's activities in the process of preparing for teaching in English in professional activity are determined by all the types of motivation. The student is positively inclined towards this type of activity in the educational process, shows a steady interest in teaching professional communication skills in a foreign language in their intending professional activity; actively participates in the educational process while studing the discipline "Professionally oriented foreign language".

Medium level – the student's activities in the process of preparing for teaching in English in

professional activities are characterized by pragmatic motives. The student is aware of the need to master the skills of communication in a foreign language in order to apply them in professional activity; strives to improve them. The attitude to the communication in a foreign language in their intending professional activity is neutral. Interest in the use of English in their professional activity is episodic. The activity in the educational process of studying the discipline "Professionally oriented foreign language" is medium.

Low level – the student's activities in the process of preparing for teaching in English in professional activities are determined by cognitive (interest in the forms and methods of learning) and social motives. The student is negatively tuned to this type of activity in the educational process, there is no interest in learning skills in teaching in English in his intending professional activity; the activity of participation in the educational process when studying the discipline "Professionally oriented foreign language" is low.

To identify the degree of sustainability of interest, the nature of attitude and the prevalence of types of motivation for teaching in English in professional activities, we conducted a survey based on the methodology "Studying the motives of students' educational activities" developed by A. A. Rean and V. A. Yakunin⁸ and methods for identifying types of motivation to learn a foreign language developed by E. I. Passov and A. N. Shchukin⁹.

The students of pedagogical specialities were asked to answer the questions whether they like to learn English; what the purpose of their learning is and how much time they devote to language learning; whether they would agree to

⁸ Bordovskaya N. V. *Pedagogy: Textbook for universities*.
St. Petersburg: Piblishing House Piter, 2000, 304 p. (In Russian).

⁹ Shchukin A. N. Teaching foreign languages: theory and practice: a manual for teachers and students. Moscow: Filomatis, 2007, 475 p. (In Russian).



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learn English if it were not connected with their professional necessity; what, in their opinion, has an impact on increasing motivation in learning a foreign language.

The analysis of the level of motivation and interest in teaching in English in professional activity at the initial stage of experimental work shows that most students have a low and medium level of motivation (Figure 4).

By averaging the data, we generalized the characteristics of the levels of formation of the readiness of pedagogical specialties students to teach in English in their professional activity (Figure 5).



Fig. 4. Levels of formation of the motivational component which shows the readiness of pedagogical specialties students to teach in English in their professional activity



Fig. 5. Summary characteristics of the levels of formation of pedagogical specialties students' readiness to teach in English in their professional activities according to the results of the ascertaining stage of the experiment

According to the indicators for the entire set of components, it can be concluded that the percentage of the average and low level of readiness of pedagogical specialties students to teach in English in their professional activities is higher, which indicates the need to increase the efficiency of the process of forming this readiness.



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Conclusions

The analysis of the testing and questioning results of pedagogical specialties graduate students made it possible to reveal that the majority of the students have an average and low level of the readiness under study. Having considered each component of the readiness and the level of its formation, the total result of which determines the degree of readiness of pedagogical specialties graduate students to teach in English, we have identified the following features of this process:

- the level of formation of the cognitive component of the readiness of pedagogical specialties students to use the English language in activities varies their professional from intermediate to higher, which means that students demonstrate the knowledge of the English language system for the correct design and understanding of the statement as an act of communicative activity, possess linguistic, sociolinguistic, professional and communicative knowledge, have the ability to enter into communication in English, switch from one type of activity to another, analyze, generalize, draw conclusions:

– analysis of the level of formation of the praxeological component of the readiness of pedagogical specialties students to teach in English in their professional activities showed that students demonstrated a low degree of proficiency in the skills and abilities of using the English language in professional activities, in the majority – an insufficient degree of independence in performing actions in various situations, which does not always mean the misuse of language. This result indicates that training at a university does not always fully prepare a graduate for professional activity, therefore, we are of the opinion that the content of educational programs at a university should be more practice-oriented,

especially for pedagogical specialties. This will facilitate effective preparation for the profession;

- the students demonstrated an average level (from low to medium) of the motivational component of the readiness to teach in English in their professional activities. This means that the students in the process of preparing to teach in English are guided by the pragmatic motives: they are rather neutral about the activity of communicating in a foreign language in their future professional activities, they do not have high internal motivation to teach in English in their professional activities; they have a low interest in teaching the skills of using the English language in their future professional activities.

The total aggregate of the formation of the components of the readiness of pedagogical specialties students to teach in English in their professional activity, with a sufficient level of formation of the cognitive component, average level of motivational component and low level of praxeological component, demonstrated in general an insufficient level of readiness of pedagogical specialties students to teach in English, which can significantly complicate the process of introducing the trilingual education system.

Thus, a contradiction arises between the objective need of the society for teaching staff with a high level of professional training, capable of using English in their professional activities, and the insufficient level of readiness of the majority of the pedagogical specialties students to carry out this type of activity.

This problem determines our further research, which will consist in finding ways aimed at forming the readiness of pedagogical specialties students to teach in English in their professional activities in the context of modernization of education in the Republic of Kazakhstan.



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REFERENCES

- 1. Nevinnova E. A., Onoprienko N. A., Ayazbekova B. K. Languages and trilingual education: On the problem of the development of trilingual education in Kazakhstan. *Topical Issues of Philology and Methods of Foreign Language Teaching*, 2017, vol. 11, pp. 219–222. URL: https://www.elibrary.ru/item.asp?id=29196768
- Zhetpisbaeva B. A., Syrymbetova L. S., Kubeeva A. E. On the issue of training teachers for multilingual education in Kazakhstan. *Topical Issues of Philology and Methods of Foreign Language Teaching*, 2017, vol. 11, pp. 168–172. URL: https://www.elibrary.ru/item.asp?id=29196750
- 3. Jeon M. Native-English speaking teachers' experiences in East-Asian language programs. *System*, 2020, vol. 88, pp. 102178. DOI: https://doi.org/10.1016/j.system.2019.102178
- 4. Melezhik K. A. Language policy and language reality of internationalisation in the university community. *Political Linguistics*, 2016, no. 1, pp. 151–158. URL: https://www.elibrary.ru/item.asp?id=25718842
- 5. Christiansen P. V. Language policy in the European Union: European /English/Elite/Equal /Esperanto Union? *Language Problems and Language Planning*, 2006, vol. 30 (1), pp. 21–44. DOI: https://doi.org/10.1075/lplp.30.1.03chr
- 6. Vega-Mendoza M., West H., Sorace A., Bak T. H. The impact of late, non-balanced bilingualism on cognitive performance. *Cognition*, 2015, vol. 137, pp. 40–46. DOI: https://doi.org/10.1016/j.cognition.2014.12.008
- Kolos E. A. Problems of implementation in the system of education of Kazakhstan by the program of polyazation. *Economic Development of the Region: Management, Innovation, Training*, 2017, no. 4, pp. 150–155. URL: https://www.elibrary.ru/item.asp?id=30459816
- Lee H. H., Lin Kim G. M., Chan L. L. Good teaching: What matters to university students. *Asia Pacific Journal of Education*, 2015, vol. 35 (1), pp. 98–110. DOI: https://doi.org/10.1080/02188791.2013.860008
- 9. Banos R., Baena-Extremera A., Ortiz-Camacho M. del M. Prediction of the satisfaction with the student life, based on teaching competence and satisfaction with the school. *Frontiers in Psychology*, 2019, vol. 10, pp. 2506. DOI: https://doi.org/10.3389/fpsyg.2019.02506
- Ertmer P. A. Teacher pedagogical beliefs: The final frontier in our quest for technology integration? *Educational Technology Research and Development*, 2005, vol. 53, pp. 25–39. DOI: http://dx.doi.org/10.1007/BF02504683
- Constantino G. D. Educational technology and teacher education: Barriers and gates in South America. *Creative Education*, 2014, vol. 5 (12), pp. 1080–1085. DOI: https://doi.org/10.4236/ce.2014.512122
- 12. Ahmad A. Globalization of science and technology through research and development. *Open Journal of Social Sciences*, 2014, vol. 2 (4), pp. 283–287. DOI: https://doi.org/10.4236/jss.2014.24031
- Abukhattala I. The use of technology in language classrooms in Libya. *International Journal of Social Science and Humanity*, 2016, vol. 6 (4), pp. 262–267. DOI: https://doi.org/10.7763/IJSSH.2016.V6.655
- Hashmi N. A. Computer-assisted language learning (CALL) in the EFL classroom and its impact on effective teaching-learning process in Saudi Arabia. *International Journal of Applied Linguistics and English Literature*, 2016, vol. 5 (2), pp. 202–206. DOI: https://doi.org/10.7575/aiac.ijalel.v.5n.2p.202



2020, Vol. 10, No. 4 http://en.sciforedu.ru/ ISSI

ISSN 2658-6762

- 15. Padmavathi M. A Study of student-teachers' readiness to use computers in teaching: An empirical study. *Journal on School Educational Technology*, 2016, vol. 11 (3), pp. 29–39. DOI: https://doi.org/10.26634/jsch.11.3.4788
- 16. Shin S.-J., Chang K. Integrating technology to facilitate critical reflection and creativity in preservice teacher development. *International Journal of Knowledge and Learning*, 2016, vol. 11 (2/3), pp. 166–177. DOI: https://doi.org/10.1504/IJKL.2016.079756
- 17. Vezirov T. G. Preparation of masters of education using the internet and web 2.0 services in teaching foreign languages. *Topical Issues of Philology and Methods of Foreign Language Teaching*, 2020, vol. 14, pp. 134–137. URL: https://www.elibrary.ru/item.asp?id=42690232
- Mingazheva E. A. Interactive briefing as one of the forms of control of mastering communicative foreign language competence of students at the university by means of self education. *Topical Issues of Philology and Methods of Foreign Language Teaching*, 2020, vol. 14, pp. 178–182. URL: https://www.elibrary.ru/item.asp?id=42690242
- Cai M. Professional self-development based on informal learning: A case study of foreign language teachers in a university of China. *Open Journal of Social Sciences*, 2019, vol. 7 (12), pp. 26–38. DOI: https://doi.org/10.4236/jss.2019.712003
- Zhankina B. Z., Kostina E. A., Zhetpisbayeva B. A., Kargin S. T. Basic factors of developing learner autonomy in foreign language education (with the main focus on Kazakhstan). *Science for Education Today*, 2019, vol. 9 (2), pp. 126–139. DOI: http://dx.doi.org/10.15293/2658-6762.1902.09
- Oliveira Santos R. R., Nunes Vieira J., Souza Ribeiro M. S., Lourenço da Silva C. M., Lasalvia V. C., de Santana Padilha Neto A. A Professional teacher work agenda teaching in higher education. *Creative Education*, 2019, vol. 10 (7), pp. 1383–1399. DOI: https://doi.org/10.4236/ce.2019.107103
- Sozer E. M., Zeybekoglu Z., Alayli A. Examining graduate teaching assistants' conceptions of and readiness for effective teaching in a non-profit Turkish university. *Innovations in Education and Teaching International*, 2019, vol. 56 (3), pp. 373–384. DOI: https://doi.org/10.1080/14703297.2018.1453369
- Tazhigulova G. O., Assanova D. N., Uteubaeva E. A., Mekezhanova A. B., Tleuzhanova G. K. Conditions of English language teaching to prospective biology teachers in Kazakhstan. *Novosibirsk State Pedagogical University Bulletin*, 2018, vol. 8 (6), pp. 23–40. DOI: http://dx.doi.org/10.15293/2226-3365.1806.02
- 24. Boei F., Dengerink J., Geursen J., Kools Q., Koster B., Lunenberg M., Willemse M. Supporting the professional development of teacher educators in a productive way. *Journal of Education for Teaching*, 2015, vol. 41 (4), pp. 351–368. DOI: https://doi.org/10.1080/02607476.2015.1080403

Submitted: 12 June 2020 Accepted: 10 July 2020 Published: 31 August 2020



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