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DOI: [10.15293/2226-3365.1806.02](https://doi.org/10.15293/2226-3365.1806.02)

УДК 372.881.111.1

УСЛОВИЯ РЕАЛИЗАЦИИ ЯЗЫКОВОЙ ПОДГОТОВКИ УЧИТЕЛЕЙ-БИОЛОГОВ В КАЗАХСТАНЕ

Г. О. Тажигулова, Д. Н. Асанова, Э. А. Утеубаева,
А. Б. Мекежанова, Г. К. Тлеужанова (Караганда, Республика Казахстан)

Проблема и цель. Происходящие изменения в системе образования Казахстана, в частности обновление содержания школьного образования, актуализировали проблему языковой подготовки будущих учителей-предметников, которые ведут школьные дисциплины на английском языке. Цель исследования заключается в выявлении организационно-педагогических условий, требуемых для реализации языковой подготовки будущих учителей биологии в условиях обновленного содержания школьного образования.

Методология. Исследование проводилось путем анализа и обобщения научно-теоретических источников по теме исследования, нормативных документов по организации языковой подготовки студентов специальности «Биология», анализа и систематизации эмпирического материала на основе интервьюирования учителей, преподающих профильные предметы на английском языке, а также студентов специальности «Биология».

Результаты. Авторами был определен ряд организационно-педагогических условий, необходимых для эффективной языковой подготовки будущих учителей биологии в условиях

Тажигулова Гульмира Олжабаевна – доктор педагогических наук, профессор кафедры транспорта и профессионального обучения, Карагандинский государственный университет имени академика Е. А. Букетова.

E-mail: 19gt@mail.ru

Асанова Дария Нуртасовна – кандидат педагогических наук, доцент кафедры теории и методики иноязычной подготовки, Карагандинский государственный университет имени академика Е. А. Букетова.

E-mail: assanova-dariya@mail.ru

Утеубаева Эльмира Айтказиевна – кандидат педагогических наук, доцент кафедры теории и методики иноязычной подготовки, Карагандинский государственный университет имени академика Е. А. Букетова.

E-mail: clmira5555@mail.ru

Мекежанова Асель Бисембаевна – магистр педагогических наук, докторант кафедры теории и методики иноязычной подготовки, Карагандинский государственный университет имени академика Е. А. Букетова.

E-mail: asselzhanel@mail.ru

Тлеужанова Гульназ Кошкимбаевна – кандидат педагогических наук, ассоциированный профессор, заведующая кафедрой теории и методики иноязычной подготовки, Карагандинский государственный университет имени академика Е. А. Букетова.

E-mail: tleushanowa@inbox.ru



обновления содержания школьного образования. В ходе анализа результатов проведенного интервью авторами были выявлены основные проблемы организации языковой подготовки будущих школьных учителей-предметников, среди которых доминантой являются недостаточная языковая готовность и недостаточность соответствующей учебно-методической базы.

Заключение. Обобщаются организационно-педагогические условия языковой подготовки будущих учителей биологии в условиях обновленного содержания школьного образования, реализация которых в полной мере повлияет на эффективность языковой подготовки будущих учителей биологии. К ним необходимо относить соответствующую нормативно-методическую документацию и учебно-методическое оснащение по биологии, профессионально-ориентированную направленность, наличие единой интерпретации понятия «иноязычная профессиональная компетенция», готовность вести занятия на иностранном языке и заниматься исследовательской деятельностью, создание соответствующей образовательной среды.

Ключевые слова: языковая подготовка; естественно-научное направление; трехязычное образование; образовательный процесс; иноязычная профессиональная компетенция; нормативно-методическое обеспечение; профессионально-ориентированная направленность.

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DOI: [10.15293/2226-3365.1806.02](https://doi.org/10.15293/2226-3365.1806.02)

Gulmira Olzhabaevna Tazhigulova

Doctor of Pedagogical Sciences, Professor,
Department of Transport and Vocational Training,
Academician E. A. Buketov Karaganda State University, Karaganda, Republic of
Kazakhstan.

ORCID ID: <https://orcid.org/0000-0001-7026-3947>

E-mail: 19gt@mail.ru

Dariya Nurtasovna Assanova

Candidate of Pedagogical Sciences, Associate Professor,
Department of Theory and Methods of Foreign Language Training,
Academician E. A. Buketov Karaganda State University, Karaganda, Republic of
Kazakhstan.

ORCID ID: <https://orcid.org/0000-0002-3843-9153>

E-mail: assanova-dariya@mail.ru

Elmira Aytkazievna Uteubaeva

Candidate of Pedagogical Sciences, Associate Professor,
Department of Theory and Methods of Foreign Language Training,
Academician E. A. Buketov Karaganda State University, Karaganda, Republic of
Kazakhstan.

ORCID ID: <https://orcid.org/0000-0002-1648-114X>

E-mail: elmira5555@mail.ru

Assel Bissembaevna Mekezhanova

Master of Pedagogical Sciences, PhD student,
Department of Theory and Methods of Foreign Language Training,
Academician E. A. Buketov Karaganda State University, Karaganda, Republic of
Kazakhstan.

ORCID ID: <https://orcid.org/0000-0002-5464-6662>

E-mail: asselzhanel@mail.ru

Gulnaz Koshkimbaevna Tleuzhanova

Candidate of Pedagogical Sciences, Head,
Department of Theory and Methods of Foreign Language Training,
Academician E. A. Buketov Karaganda State University, Karaganda, Republic of
Kazakhstan.

ORCID ID: <https://orcid.org/0000-0003-2302-1595>

E-mail: tleushanowa@inbox.ru

Conditions of English language teaching to prospective biology teachers in Kazakhstan

Abstract

Introduction. The ongoing changes in the education system of Kazakhstan, in particular, the updating of the content of school education, have actualized the problem of language training of future subject teachers who conduct school disciplines in English. The purpose of the study is to identify the organizational and pedagogical conditions required to implement language training of future biology teachers in the context of the updated content of school education.



Materials and Methods. *The study was conducted by means of analyzing and summarizing scientific and theoretical sources on the research problem, review of normative documents on the organization of language training of biology students, analysis and systematization of empirical data on the basis of interviewing teachers of profile subjects, giving lessons in English, as well as Biology students.*

Results. *The authors identified a range of organizational and pedagogical conditions necessary for effective implementation of language training of future biology teachers in conditions of updating the content of school education. During the analysis of the interview results, the authors revealed the main problems of organizing language training for future school subject teachers, among which the lack of language readiness and inadequate educational and methodological base are dominant.*

Conclusions. *The authors summarize the organizational and pedagogical conditions for language training of future biology teachers in the context of the updated content of school education, which implementation can contribute to effectiveness of language training of future biology teachers.*

Keywords

Language training; Natural-science direction; Trilingual education; Educational process; Foreign language; Professional communicative competence; Normative support; Methodological support; Professionally oriented orientation.

Introduction

The language policy of Kazakhstan is aimed at its integration into the world community, which is reflected in the policy of trilingualism, implying the Kazakhstanis' possession of Kazakh, Russian and English. The Kazakh, Russian and English languages are viewed not as a goal in themselves, but as a means of achieving economic goals related to the perceived Eurasian quality in a multi-ethnic Kazakhstan [1, p. 177].

Foreign language not only acts as an object of independent study and serves as a means of forming general professional competences [2, p. 577], but also possesses a high meta-subject potential [3]. As a means of teaching, language acts as a mechanism for integrating language objects with other subjects, therefore, regardless of the language of instruction in the main school, "Natural Science", "Computer Science", "Physics", "Chemistry" and "Biology" are planned to be studied in English¹.

The introduction of trilingual education is regulated by such normative and legal documents as Message of the President of the Republic of Kazakhstan to the people of Kazakhstan dated February 28, 2007 "New Kazakhstan in the New World", Message of the President of the Republic of Kazakhstan dated January 17, 2014 "Kazakhstani way – 2050: common goal, common interests, unified future", the State Program for the Development of Education and Science of the Republic of Kazakhstan for 2016–2019, the State Program for the Development and Functioning of Languages in the Republic of Kazakhstan for 2011–2020, Roadmap of Trilingual Education Development of for 2015–2020 years, the Strategy "Kazakhstan-2050: new political course of the established state", Concept of entering top 30 most developed countries.

The given reform comes into force in 2018–2019 school year. According to the trilingual education system, the discipline "History of Kazakhstan" is to be studied in schools in the

¹ Zhetpisbaeva B. A., Shaikhyzada Zh. G. Conceptual bases of continuous language training of engineering personnel in Kazakhstan in the system "College –

university". *Pavlodar State University Bulletin*, 2015, no. 4, pp. 63–70. (In Russian)



Kazakh language, the discipline "World History" is to be taught in Russian, starting from the 5th grade, students are going to master the specific terminology of the disciplines "Computer Science", "Physics", "Chemistry" and "Biology" in English, thus preparing to study the above disciplines in English in the senior classes. The transition to teaching of the four disciplines in English in the senior classes in Kazakhstan began in 2017 and is phased. The complete transition is planned to be carried out by 2023².

Disciplines of the natural science cycle, being basic in the sense of forming the foundations of education for scientific and technological progress, were chosen for introduction of the policy of trilingualism not by chance: they use the sign system and a large number of terms that do not have special translation.

The above-mentioned educational reforms create the need for the training of personnel with an appropriate education who speak a foreign language [4, p. 86]. The system of higher education should provide appropriate conditions for the language training of its graduates, that ensures their acquisition of a foreign language professional competence [5, p. 103].

Currently, foreign experts are conducting research in the field of language training as one of the means of studying non-linguistic disciplines, including natural sciences. We have studied the experience of some countries in this area. Thus, in Europe, the Middle East, Southeast Asia and Japan, the CLIL approach (Content and Language Integrated Learning) has become widespread [6, p. 389]. In North America, it was named CBI (Content Based Instruction). According to these approaches one of the conditions for language

training is the parallel training of profile disciplines in English [7, p. 70]. They do not only carry sociocultural value, but also suggest using English as an additional tool for gaining advantages in a competitive world [8, p. 488]. Nevertheless, according to a study by E. Arnó-Macià and G. Mancho-Barés, practitioners of these approaches are afraid that an insufficient level of language training can damage acquisition of profile disciplines [9, p. 64].

Griffith University of Australia practices language training of foreign students for studying profile disciplines in English as compulsory courses to improve the level of English. The program is presented in the form of a strategy for improving English at the higher school level for the development of academic literacy of students for whom English is a foreign language in 4 areas: Language and Communication for Business and Commerce, Language and Communication for Sciences and Language and Communication for Arts and Social Sciences [10, p. 9].

The need to teach disciplines in English imposes great responsibility on future teachers. Izquierdo NB, examining the language training of future teachers of profile disciplines in the Spanish region Castile and Leon, argues that one of the prerequisites for effective formation of foreign-language professional competence, is organization of mastering methodology of teaching the discipline in a foreign language, besides studying the language for professional purposes [11, p. 161].

D. Freeman sees one of the conditions for the language training of future teachers in the development of methodological materials and curricula designed to meet specific needs of students associated with content in specific

² State Program for the Development of Education and Science of the Republic of Kazakhstan for 2016–2019 (In Russian). Decree of the President of the Republic of Kazakhstan of 1 March 2016, N 205. *Information and*

Legal System of Regulatory Legal Acts of the Republic of Kazakhstan: Adilet. URL: <http://adilet.zan.kz/eng/docs/U1600000205> (accessed: 21.11.2017).



disciplines and focused on syntax, vocabulary, discourse, semantics, etc. The researcher presents three components of this condition: professional activity and content, orientation to the needs and goals of students, language use for the study of disciplines [12].

It is worth noting one more approach, which provides the creation of favorable conditions for organization of training in English as a foreign language, which combines discipline and language. It is called "sheltered instruction", which is widely used in the US for more than 20 years in all subject areas and at all levels [13, p. 4237]. Within the framework of "sheltered instruction", a lot of educational sites have been developed that deal with the cognitive problems underlying the linguistic complexity of teaching natural sciences, against the background of complex and abstract concepts of this kind of disciplines. G. N. Cervetti, J. M. Kulikowich and M. A. Bravo suggest transformation of scientific abstract concepts, with which natural science disciplines abound, into more concrete ones as one of the conditions for successful implementation of foreign language vocational training. This is achieved through the use of tools such as images and video, not just text or audio, involving manipulation and realities to work with academic vocabulary, as well as participating in more kinesthetic activities to make understanding more comprehensible [14, p. 87]. D. J. Short enriches this list with gestures, message simplification, modeling and other methods for providing key information [13, p. 4240].

Due to the same historical past, Russia's experience in this matter is of great interest to Kazakhstan. Higher educational establishments of the Russian Federation also train specialists for

their future professional activities in English. Nevertheless, there is evidence that university graduates sometimes still do not demonstrate the proper level of English proficiency. For example, graduates of Tomsk Polytechnic University wrote in the questionnaires that they were not able to communicate effectively in English, especially in a professional way. In addition, about 70 % of the graduates surveyed admitted that it was difficult for them to answer interviewer's questions about research interests in English [15, p. 153].

Thus, the results of studies by foreign and domestic specialists on conditions for organization of language training for students for whom English is foreign have shown that there is a need to revise the organizational and pedagogical conditions for language training in order to improve its effectiveness. This, in turn, allowed us to make an attempt to identify the organizational and pedagogical conditions required to implement the language training of future biology teachers in the context of the updated content of school education, as the goal of this study.

Materials and Methods

The methodology of the research is study and analysis of psychological, pedagogical, methodological and normative literature. The basis is taken of the works in the field of language training of future specialists (O. Vitchenko [5], S. V. Dmitrikhenkova [2], A. T. Kerimkulov [15], Yu. Yu. Kovaleva [15], E. A. Malykh [2], A. V. Soboleva [15], V. A. Chuzova [2], B. Fenton-Smith [10], D. Freeman [12], P. Humphreys [10], A. Lobo [10], R. Michael [10], I. Walkinshaw [10]); competence approach in education (V. I. Baydenko³, I. A. Zimnyaya⁴,

³ Baydenko V. I. *Competence approach to the design of state educational standards for higher professional education (methodological and methodological issues): Methodological manual*. M.: Research Center for Quality

Problems in Training of Specialists, 2005, 114 p. (In Russian).

⁴ Zimnyaya I. A. *Key competences as the effective-target basis of the competence approach in education. Author's*



S. S. Kunanbaeva⁵, A. V. Khutorskoy⁶); development of pedagogical conditions for organization of language training for students of non-linguistic specialties (A. V. Khutorskoy⁷ [16], J. Schonrock-Adema, T. Bouwkamp-Timmer, E. A. van Hell, J. Cohen-Schotanus [17], D. Troy Sadler [18], L. N. Ponomarenko, I. S. Zlobina, E. O. Galitskih, O. S. Rublyova [19]); approaches to implementation of the meta-subject potential of a foreign language (K. E. Bezukladnikov [20], N. D. Galskova⁸, E. Yu. Dolmatovskaya⁹, M. Novoselov [20], E. Arnó-Macià [9], R. Cross [6], D. Gaipov [3], F. Lorenzo [8], G. Mancho-Barés [9], V. Pavon [8], A. Perez [8], D. J. Short [13] and etc.).

The following methods were used for solving the research tasks: studying psychological, pedagogical, methodological literature, normative documentation, interviewing teachers who give biology lessons in English, as well as students of natural-science specialties.

Results

The introduction and implementation of teaching profile subjects in English in Kazakhstan raises a number of questions from the point of view of the understanding by teachers and students of the specific features of teaching profile subject in English, its normative and methodological provision, and their points of view on foreign language professional competence and ongoing lessons.

In this study, we tried to find answers to the following questions:

– Are teachers and students ready to teach their subjects in English?

– What measures have been taken/implemented to create a foreign professional competence?

– Are modern teaching and methodological materials (working programs, working programs of discipline for students, methodical literature, manuals, reference books, etc. provided to students and practicing teachers?

– Is there sufficient regulatory and methodological support for the implementation of this issue?

– What are the reasons for possible and emerging difficulties in teaching profile subjects in English?

18 teachers of profile subjects teaching in English in Karaganda schools, as well as 32 students of Karaganda State University, studying in specialty 5B011300 – Biology of the natural-science direction, took part in the interview. The questionnaire was conducted in secondary schools of Karaganda and Karaganda State University.

To conduct the questionnaire, we prepared questions aimed at finding out the teachers' opinions on the professional and linguistic readiness of teachers, the quality and accessibility of normative documents and educational and methodical resources necessary for the

version. M.: Research Center for Quality Problems in Training of Specialists, 2004, 40 p. (In Russian).

⁵ Kunanbaeva S. S. *Competent modeling of professional foreign language education* Monograph, Almaty, 2011, 215 p. (In Russian).

⁶ Khutorskoy A. V. Key Competences as a Component of the Personally Oriented Education Paradigm. *Student in the Renewable School. Collection of scientific papers*, Moscow: IOSO RAO, 2002, pp. 135–157. (In Russian).

⁷ Khutorskoy A. V. Model of the educational environment in remote heuristic learning. *Eidos*, 2005, no. 4. (In Russian)

⁸ Galskova N. D. *Modern methods of teaching a foreign language: A handbook for teachers* M: ARCTI-Glossa, 2000, 165 p. (In Russian).

⁹ Dolmatovskaya E. Yu. Preparation for professional activity in teaching a specialty language in a non-linguistic university. *Ways to improve the effectiveness of teaching a foreign language in a non-linguistic institution*, M., 1900, pp. 59–69. (In Russian).

organization of the educational process, shortcomings and existing problems in the teaching of profile subjects in the English language. The questionnaires contain questions about the provision of teachers with necessary educational and methodological literature, availability of material and technical facilities to educational institutions, and availability of an appropriate educational environment in general. In this study, we tried to determine what difficulties teachers face, and also to find out how future biology teachers see their future teaching activities in English.

The results of the questionnaire showed that nowadays, with sufficient access to normative

documentation, there is an acute shortage of textbooks and teaching aids in biology in English, insufficient equipment with an educational and methodological base that includes textbooks that meet the requirements of the updated content of education, methodological recommendations, terminological dictionaries for each year of study, glossary, etc.

Responses of the questionnaire on language readiness for conducting classes and research in English indicate that the majority of the respondents (43 %) note that their language skills are insufficient to conduct lessons in a foreign language (See Diagram 1).

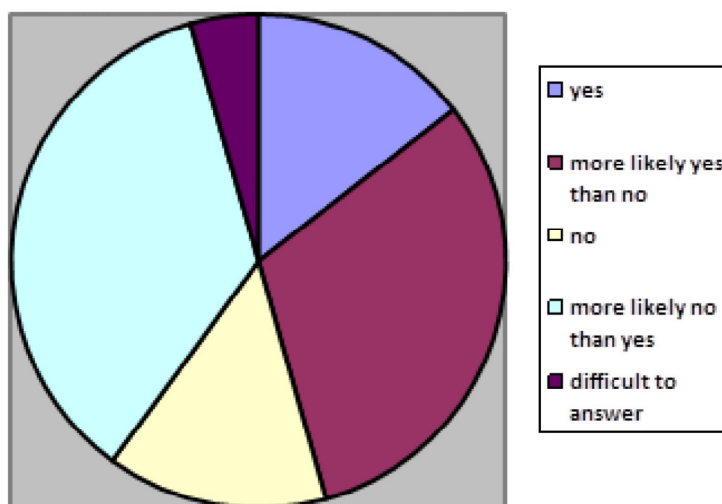


Diagram 1. Language readiness of the respondents

Thus, the teachers and students note the language readiness to teach disciplines in a foreign language and lack of an appropriate teaching and methodological support as the main difficulties of gradual transition to teaching Biology in a foreign language.

Let us consider the normative and methodological conditions for the organization of

language training of future teachers of the natural-science direction by the example of the specialty 5B011300 – Biology. Language training of future biology teachers is provided with the following normative and methodological platform: State compulsory standard of higher education in the Republic of Kazakhstan⁹, Standard academic program of the discipline "Professionally

⁹ State compulsory standard of higher education. Decree of the Government of the Republic of Kazakhstan No. 292

of May 13, 2016. *Information and Legal System of Regulatory Legal Acts of the Republic of Kazakhstan.*



Oriented Foreign Language" for the specialty 5B011300 – Biology¹⁰, a working program and a syllabus on the subject "Professionally Oriented Foreign Language", a working program and a syllabus on the subject "Language for Special Purposes" for the specialty 5B011300 – Biology (elaborated in Karaganda State University, 2014), Official instructions of the Biology teacher¹¹.

State compulsory standard of higher education contains general provisions, the list of educational programs within the specialty, the list of qualifications and positions, the qualification characteristics of the bachelor's degree, the main national goals of education and the hierarchy of goals, the requirements for the level of education of graduates, the content of educational programs in the specialty, the goals of education and its expected results, requirements for educational environment for the preparation of bachelor's degree in the specialty, requirements for certification procedures, requirements for development, updating (change, adjustment) of state compulsory education standards, requirements for a document confirming the receipt of an appropriate academic degree and its annex⁹.

The given normative document specifies the knowledge, skills and abilities that a future biology teacher should have, key competencies of the graduate are presented: special competence, communicative competence, information competence, intellectual competence, social competence, personal competence, profile competence. At the same time, foreign language competence is not included in this list. Also,

according to the state educational standard, universities that implement trilingual education programs plan and organize educational activities in three languages: the language of instruction, the second and English languages, assigning 30% of the academic load to academic subjects in English. These facts prove that at the level of the State Compulsory Educational Standard of the Republic of Kazakhstan language training is given proper attention⁹.

The standard academic program of the discipline "Professionally Oriented Foreign Language" for the specialty 5B011300 – Biology, recommended by the Ministry of Education and Science of the Republic of Kazakhstan in 2016, includes a description of the purpose and objectives of the course, expected results of training, knowledge, skills and abilities received by students in the end of studying the discipline, the thematic plan of the discipline and its brief content¹⁰.

Since the discipline "Professionally-oriented foreign language" is included in the obligatory component, the working program of the discipline for students on the subject "Professionally-oriented foreign language" is compiled on the basis of the above-mentioned standard academic program, so it fully describes not only the content of the discipline and the thematic plan with the distribution of hours, but also necessary foreign language competencies. In the normative plane, the description of the foreign competence in this document is also regulated.

Thus, in the normative documents of institutions of higher education, the foreign

Adilet. (In Russian) URL: <http://adilet.zan.kz/eng/docs/P1200001080#z492> (accessed: November 21, 2017)

¹⁰ Standard academic program of the discipline "Professionally Oriented Foreign Language" for students of the specialty 5B011300 – Biology Almaty, 2016, pp. 24 – 33. (In Russian).

¹¹ Official instructions of the Biology and Chemistry teacher of the State Institution "Baymyrzinskaya secondary school" (In Russian) URL: <http://sc0006.enbekshilder.akmoedu.kz/documents/view/F121E193B77E25FF.html> (accessed: 21.11.2017)



professional competence is represented in the form of knowledge, skills and habits, it is included in the list of key competencies, and the logic of the language training of future specialists is not violated.

Let us consider the documents regulating work of the biology teacher in institutions of secondary education.

Official instructions of the biology teacher are developed by school administration. We examined the official instructions of the teacher of biology, chemistry (State Institution "Baymyrzinskaya secondary school"¹¹), official instructions of the teacher of biology, chemistry (secondary school № 28, Astana). The following competencies are represented in the job descriptions considered by us: professional competence, communicative competence, information competence, legal competence. The foreign-language competence is not included in these documents presented, which indicates that at this level of language training, the possession of a foreign language is not included in the list of requirements for the teacher of the natural sciences.

Thus, having analyzed the above normative and methodological documents, we can draw the following conclusions.

1. There is no continuity in the normative and methodological documentation reflecting the key competencies that a biology teacher giving lessons in English should possess.

2. It is required to include the development of foreign-language professional competence in documents developed by secondary schools. This will create the integrity of the educational process and the connection between a higher educational institution preparing a specialist and a school in which he/she directly works.

3. The official instructions considered by us contain the following as the main components of competencies: professional competence,

communicative competence, information competence, legal competence. However, they do not reflect foreign-language professional competence, the formation of which is dictated by the need to conduct classes in English. Thus, the official instructions of the teacher of biology developed in schools are not unified and do not represent foreign-language professional competence as one of the key competencies that the teacher of biology should possess.

Analysis of the results of the interview and the study of foreign and domestic experience in the issue of language training of future specialists allowed us to consider, systematize and clarify the set of organizational and pedagogical conditions for implementation of the language training of future biology teachers, which includes the following items.

1. Normative and methodological support for implementation of the language training of future biology teachers in Kazakhstan.
2. Accounting for the professionally oriented focus of language training.
3. Development of a unified interpretation of the essence of the concept of "foreign-language professional competence".
4. Professional readiness of future teachers to teach a profile subject in a foreign language.
5. Formation of readiness and ability to carry out scientific research in a foreign language.
6. Development of educational and methodological equipment for biology in English.
7. Creating appropriate educational environment.

Hereafter, we are going to consider each of the above mentioned organizational and pedagogical conditions in more detail.

Normative and methodological support for implementation of the language training of future biology teachers in Kazakhstan

Sufficient degree of elaboration of normative and methodological documentation is



the basis for implementing other measures of language training. Nowadays we have observed a lack of continuity between normative and methodological documents of higher and secondary education. It is necessary to ensure a unified system of competencies necessary for teaching Biology in English, developed for higher education institutions that train relevant pedagogical staff, and secondary schools where future teachers will carry out their work. Violation of the continuity of the normative and methodical tools adversely affects understanding of necessary official duties, and therefore, the educational process as a whole by the university, secondary school and the specialist himself.

Accounting for the professionally oriented focus of language training of future specialists

N. D. Galskova considered a foreign language as an effective means of professional and social orientation of a student in a non-linguistic university. In her opinion, a two-way communication is established between the student's desire to acquire knowledge of the future specialty and the success of mastering the language while studying professional-oriented language material⁸.

P. I. Obraztsov, A. I. Akhulkova, O. F. Chernichenko also believe that when teaching a foreign language in a non-linguistic institution, one should take into account the principle of professional orientation of the educational material. The authors emphasized that learning a foreign language should not be an end in itself, but a means of achieving a goal within its specialty. Accounting for the professional orientation of language training, in

their opinion, should be carried out in the following areas: work on special texts, study of special topics for the development of oral speech, study of a minimal terminological vocabulary in the corresponding specialty, creation of manuals to enhance grammatical and lexical material of students¹².

Development of a unified interpretation of the essence of the concept of "foreign-language professional competence"

Mastering the necessary level of **foreign-language professional competence**, which is considered to be the "leading and core" that underlies all others is considered to be the condition for formation of a poly-linguistic and multicultural personality of a future specialist in professionally-oriented foreign-language space.

Such researchers as K. E. Bezukladnikov [18], I. L. Bim¹³, N. D. Galskova⁸, E. F. Zeer¹⁴, I. A. Zimnyaya⁴, E. N. Solovova¹⁵, and others are interested in exploring the question of forming a foreign-language communicative competence.

Foreign language competence is a form of professional identity, the teacher is all the more successful, the more freely he uses a foreign language [12].

Taking into account the need for language training of future specialists, who need to have a sufficient command of a foreign language for professional communication, the term "foreign communicative competence" is supplemented with the notion of a foreign-language professional competence.

Thus, the most important component of the professional competence of future bachelors is the

¹² Obraztsov P. I., Akhulkova A. I., Chernichenko O. F. *Development and designing of professionally oriented technology of training*. Oryol, 2005, 61 p. (In Russian)

¹³ Bim I. L. *Methods of teaching foreign languages as a science and the problems of a school textbook*. M.: Russian language, 1977, 288 p. (In Russian)

¹⁴ Zeer E.F. *Modernization of vocational education: competence approach: textbook*. M.: MPSU, 2005, 216 p. (In Russian)

¹⁵ Solovova E. N. *Methodical training and retraining of a foreign language teacher: an integrative-reflexive approach*. M.: Glossa-Press, 2004, 336 p. (In Russian)

foreign-language professional competence that allows university graduates:

1) to interact with native speakers of another language and culture, taking into account professional characteristics, national values and norms of behavior in the context of globalization;

2) to create a positive attitude in the professionally oriented foreign language communication;

3) to successfully choose ways of verbal and non-verbal communication that are adequate to situations of professionally-oriented communication [20].

Professional readiness of future teachers to teach a profile subject in a foreign language

S. Roussel, D. Joulia, A. Tricot and J. Sweller argue that success of language training as one of the components of study of non-linguistic disciplines depends on previous students' achievement, general cognitive abilities, motivation or social factors [7, p. 71]. S. M. Ali Al-Issa adds to this list needs of future teachers, their preferred learning styles, ability to generate interest, to build good relations with students, demonstrating flexibility, a sense of humor, friendliness, patience, the desire to help and care [21, p. 284].

It proves that the goal of pedagogical education is not only to train a teacher of a specific subject area, but also to develop the personality of a future teacher, ready for constructive dialogue, understanding and accepting various cultural attitudes and values that have the skills of intercultural dialogue as a means of interaction in modern multicultural societies [19, p. 90].

The most important condition for realization of the language training of specialists in the natural science cycle is professional readiness of future teachers to teach a profile subject in a foreign language, training of

specialists that are ready and able to introduce teaching their subjects in a foreign language.

The result of availability of professional language readiness is successful teaching of a profile subject in a foreign language, successful acquisition of the discipline by students, further development of the teacher and his professional growth. In case of insufficient readiness to conduct one's subject in a foreign language, the result may be deterioration in the quality of teaching of profile subjects in a foreign language, distortions in the choice of goals and expected results: the emphasis can be either put on teaching the language without its connection with a core subject, or on teaching a subject with an arbitrary inclusion of special vocabulary in a foreign language. Therefore, we consider the optimal methodological solution to be the development of unified methodological and normative support for teaching Biology in English with the observance of continuity of normative and methodological support.

Formation of readiness and ability to carry out scientific research in a foreign language

Researchers of the problem of forming a foreign-language professional component of a university graduate say that in implementing the language training of a future specialist it is also necessary to form his readiness and ability to conduct scientific research in a foreign language, which, in our view, can be correlated with the category of the research competence [22].

We believe that the formation of a foreign-language professional competence facilitates students' involvement in research activities, since knowing a foreign language, the student opens wider horizons of intercultural professional, scientific, academic interaction, removes language and psychological barriers between participants in international professional and academic communities joint research [23].



Development of educational and methodological equipment for biology in English

Since at present Kazakhstani education only makes its first steps in teaching profile subjects in a foreign language, there is a lack of sufficient textbooks and teaching aids in biology in English. Institutions of higher pedagogical education and practicing teachers should take an active part in solving this problem [24].

The urgent need for biology training in English in secondary schools is still not satisfied with teaching and methodological complexes developed with regard to Kazakhstan's state educational standards, standard academic programs and, importantly, taking into account Kazakhstani traditions of teaching this subject in secondary schools.

It should also be added that equally important quality is the ability to transform the proposed curricula and resources for organizing effective learning activities in a specific group, as well as the ability to use foreign teaching materials [21].

Creating appropriate educational environment

The term "educational environment" is presented in the works of M. I. Katilina¹⁶, E. N. Ostroumova [25], A. V. Khutorskoy [16], G. Y. Belyaev¹⁷, V. I. Andreev¹⁸ and others.

A. Khutorskoy under the educational environment understands natural or artificially created socio-cultural environment of a person, including various types of means and content of education, capable of ensuring the productive activity of the student [16].

The training success is influenced by the following factors: the ratio of pupils to school and peers, the degree of democratism in the relationships in the class, the level of tolerance, the acceptance by the teacher and pupils of the diversity of students, the diversity of educational forms and strategies, the consistency of the rules of conduct, various learning tools, computers and virtual learning environments [17; 18].

In the course of our research, we determined the following conditions that shape the educational environment necessary for language training of future biology teachers:

– Motivation for learning is formed and enhanced through increased interest in the subject (living area, ICT, additional literature, independent work with living objects, etc.);

– As a result of increasing motivation for the subject, the mental development of students is increased and their psychological and physical health is preserved;

– In the classroom, audio, video and visual additional materials should be used, avoiding preference for one type of material;

– It is mandatory to use attributes that allow you to "penetrate" into the world of another culture (maps, globes, flags, literature in foreign languages, toys, characters from international fairy tales, etc.).

Conclusions

The requirements of the society to the personality of a modern specialist have recently increased significantly in Kazakhstan. The updated content of school education, consisting in maintaining the policy of trilingualism, creates

¹⁶ Katilina M. I. *Educational environment as a factor of socialization of the individual: socio-philosophical aspect*: Cand. diss. ... Candidate of Philosophy. 09 00 11. Moscow, 2009. (In Russian)

¹⁷ Belyaev G. Y. *Pedagogical characteristics of the educational environment in various types of educational*

institutions: dis. ... cand. ped. Sciences, M., 2000, 157 p. (In Russian)

¹⁸ Andreev A. A. *Pedagogics of Higher Education (New Edition)*. Moscow: MESI, 2002, 264 p. (In Russian)



the need to revise professional competencies for the future teacher. The composition of the competences of the future biology teacher required for the competitive specialist now includes the foreign professional competence necessary for solving a wide range of tasks in professional activity and implemented in observance of certain organizational and pedagogical conditions.

These include relevant normative and methodological documentation and educational and methodological equipment in biology, a professionally oriented orientation, existence of a single interpretation of the essence of the concept of "foreign language professional competence", willingness to conduct classes in a foreign language and engage in research activities, creation of an appropriate educational environment. Observance of the conditions described above contribute to the effective solution of the task of language training of teachers, relevant in the framework of the updated content of education, according to which the subject teachers of the natural sciences should be prepared to conduct their classes in English.

Application of the organizational and pedagogical conditions described by the authors in the educational process, in particular, will improve the effectiveness of language training of future biology teachers. In the course of the study, we found that the organizational and pedagogical conditions for organizing the language training of future biology teachers in the context of the updated content of school education examined by the authors are interrelated and mutually reinforcing, which positively influences the readiness of future biology teachers to teach the subject in a foreign language.

The presence of a regulatory and legal framework and development of educational and methodological support are the necessary basis for creating an enriching educational environment for the teaching of profile subjects in English. Awareness of the importance of foreign language professional competence by teachers and the professionally oriented orientation of language preparation lead to the fact that educators are ready to teach specialized subjects in a foreign language, as well as to carry out research activities in a foreign language.

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Submitted: 20 March 2018

Accepted: 09 January 2018

Published: 28 December 2018



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