

Abstract
of the dissertation work of
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for the degree of Doctor of Philosophy (PhD)
in specialty 6D011900 – Foreign Language: Two Foreign Languages
on the topic «Scientific and methodological foundations of foreign language
training for future teachers of biology»

Relevance of the research. Modernization of the Kazakhstani education system, aimed at the formation of global and interdisciplinary competences of the XXI century, is implemented within the framework of the trilingual policy, which implies the acquisition by Kazakhstani people of communication skills in Kazakh, Russian and English. English is not only a language of international communication, but also a means of learning. Teaching natural sciences (mathematics, physics, biology, chemistry) in a foreign language is actively implemented, and therefore the demand for teachers who speak a foreign language and are ready to teach their subject in a foreign language is increasing. Consequently, the problem of foreign language training of future teachers of natural sciences (in our case, biology teachers) requires more detailed and thorough consideration, and the problem of revising existing and developing new methodological systems aimed at improving the quality and efficiency of foreign language training of future biology teachers is being updated.

The analysis of the current state of the system of foreign language training of future biology teachers in Kazakhstani universities has revealed the following **contradictions**:

- between the need to train biology teachers who teach their subject in a foreign language as part of the pedagogical education modernization, and the factually insufficient level of the foreign language proficiency of students enrolled in the educational program “Biology”;
- between the high didactic potential of foreign language training of future biology teachers for the development of trilingual education in the Republic of Kazakhstan and the lack of theoretical and applied developments on foreign language training of future biology teachers;
- between the need to improve the quality of foreign language training of future biology teachers and the insufficient development of the appropriate methodological support.

Resolution of the above contradictions is the main **problem** that has led to the choice of the research topic in the following edition “Scientific and methodological foundations of foreign language training for future biology teachers”.

The aim of the research: theoretical substantiation and practical application of the methodical system of foreign language training of future biology teachers.

The object of the research: the process of foreign language training of future biology teachers in the context of the pedagogical education modernization.

The subject of the research: the methodical system of foreign language training of future biology teachers.

The research hypothesis: foreign language training of future biology teachers will be effective **if** the process of foreign language training of future biology teachers is organized taking into account the course for the pedagogical education modernization and the introduction of the trilingual education, as well as the goals, objectives and content of foreign language education, **then** this will provide schools with biology teachers of the new formations involved in the trilingual education program, **since** the knowledge of a foreign language is one of the mandatory requirements for the professional competences of a modern biology teacher.

The research objectives. In accordance with the aim and hypothesis, the following research objectives are set:

1. To reveal current problems and trends in foreign language training of future biology teachers;

2. To clarify the concept of “foreign language subject communicative competence of future biology teachers”, to determine its structure and formedness criteria;

3. To develop the methodological system of foreign language training of future biology teachers, presented as the model of foreign language training of future biology teachers and methodological support for foreign language training of future biology teachers, consisting of the teaching aid “English for Biology Teachers” and a trilingual terminological dictionary for biology students;

4. To experimentally test the effectiveness of the methodological system of foreign language training of future biology teachers.

Methods of the research:

- theoretical methods: study and systematic analysis of psychological and pedagogical, scientific, scientific and methodological literature; normative and educational documentation, Kazakhstani and international standards in the field of higher and secondary education; comparison, modeling, abstraction;

- empirical methods: pedagogical observation, survey; diagnostic questioning; peer review and self-assessment; interpretation methods; pedagogical experiment;

- methods of mathematical statistics: the Mann-Whitney U test.

The sources of the research include the laws of the Republic of Kazakhstan in education, regulatory documents on issues of multilingual and foreign language, scientific, theoretical and philosophical, psychological and pedagogical scientific works, scientific, methodological and bibliographic databases, etc.

The methodological basis of the research is based on the provisions developed in the works of domestic and foreign scientists in the field:

- of the pedagogical process organization (N.D. Khmel, S.D. Mukanova, S.Zh. Praliev, K.K. Zhampeisova, N.N. Khan, Sh.Zh. Kolumbaeva, A.D. Kaidarova, Zh.T. Ospanova, etc.);

- of the theories of the professional and communicative orientation of the educational process in foreign languageteaching (D.N. Assanova, G.K. Tleuzhanova, E.A. Uteubaeva, U.I. Kopzhasarova, G.O. Tazhigulova, I.V. Atamanova, D.R. Akhmetova, K.Zh. Karabaeva, V.Ph. Aitov, A.I. Akhulkova, K.

Bezukladnikov, N.D. Galskova, R.P. Milrud, P.I. Obraztsov, E.I. Passov, E.R. Porshneva, O.F. Chernichenko, A. Shamov, etc.);

- of theories and practices of the multilingual and multicultural linguistic personality and linguistic multicultural education (B.A. Zhetpisbayeva, L.S. Syrymbetova, D. Nygmetuly, G.K. Dlimbetova, Z.K. Temirgazina, S.K. Moldabekova, S.A. Shunkeyeva, O. Vitchenko, D. Gaipov, E.P. Glumova, N. Bilik, M. T. L. Cavalcante, H. Erdene, G. Hu, S. MacWhinnie, C. Mitchell, G. Riberas, G. Rosa, ÇİĞ K. Selim Guvercin, Y. Yaylaci, E. L. Zen, etc.);

- of the competency-based and communicative competence-based approaches in education (A.N. Chomsky, D. Hymes, S.S. Kunanbaeva, I.A. Zimnyaya, A.V. Khutorskoy, E.F. Zeer, V.I. Baidenko, A.A. Valeev, I.G. Dikareva, I.G. Kondratieva, F.M. Litvinko, R.P. Milrud, E.I. Passov, D. Raven, V.V. Safonova, V.A. Slastenin, O.V. Khasanova, E. Baum, B.S. Bloom, etc.);

- of the development of pedagogical conditions for the organization of language training for students of non-linguistic specialties (I. Atamanova, S. Bogomaz, M.I. Katilina, G.A. Krasnoshchekova, L.A. Muslova, E.N. Ostroumova, M.Yu. Udalova, I.A. Tsaturova, T. Bouwkamp-Timmer, J. Cohen-Schotanus J. Schonrock-Adema, E.A. van Hell).

The problems of teaching foreign languages to specialists of non-linguistic specialties are in the focus of attention of such foreign and domestic scientists as S.S. Kunanbaeva, B.S. Zhumagulova, G.R. Mukusheva, S.A. Meiramova, O.D. Moskovchenko, Zh.T. Kopobaeva, A.A. Sarsenbaeva, .K. Karabaeva, S.K. Folomkina, N.D. Galskova, S.V. Dmitrichenkova, E.A. Malykh, L.A. Muslova, O.I. Shubina, V.A. Chauzova. However, the issue of foreign language training of future biology teachers requires a more careful study.

The research work includes 3 stages:

The 1st stage (2017-2018) is devoted to the formulation and understanding of the research problem, the comprehensive study and analysis of general and special scientific and methodological literature, legal documentation in the field of foreign language education, the study of the existing practice of teaching a foreign language for students of this educational program, defining pedagogical and regulatory support for foreign language training of future biology teachers.

The 2nd stage (2018-2021) is devoted to the study of the empirical foundations of the study, the study and development of the foundations of foreign language training of future biology teachers, the students and teachers's questionnaires, the processing and analysis of the data obtained, the development and testing of the methodological system of foreign language training of future biology teachers.

The 3rd stage (2021-2022) is aimed at summing up the results of experimental and pedagogical work, the results obtained are analyzed and compared with the hypothesis and tasks of the work. This stage is also associated with the generalization of the results of the research and the design of the dissertation work.

The scientific novelty of the research is the following:

- the scientific and methodological foundations of foreign language training of future biology teachers in the conditions of the Kazakhstani higher education system have been determined;

- the concept of “foreign language-subject communicative competence of future biology teachers” has been clarified and its structure has been determined;

- for the first time the methodological system of foreign language training of future biology teachers in the conditions of modernization of pedagogical education has been presented;

- for the first time, the Subject-Based Speaking technology has been developed, which is the basis for the foreign language training of future biology teachers; its structure, requirements for organizing work using this technology and stages of work with it have been determined.

The theoretical significance of the research lies in studying current problems and trends in foreign language training of future biology teachers, which made it possible to clarify the concept, structure and criteria for the formation of foreign language-subject communicative competence, to develop the methodological system of foreign language training of the desired profile, capable of ensuring the readiness of graduates for foreign language professional communication, which is one of the solutions the actual problem of training specialists in the framework of the modernization of teacher education and the introduction of trilingual education. The theoretical provisions contained in the work contribute to the methodology of foreign language education and can be used in modeling methodological systems that provide high-quality foreign language training for future biology teachers.

The practical significance of the research lies in the fact that a methodological system of foreign language training of future biology teachers has been developed and experimentally tested, it contains didactic materials such as the teaching aid “English for Biology Teachers” and a trilingual terminological dictionary for biology students. The results of our research can be useful in the work of university teachers who provide foreign language training for students in educational programs in the natural sciences.

Conclusions of the research submitted for defense:

Conclusion 1. The study of current problems and trends in the organization of foreign language training for future biology teachers leads to the following conclusions:

- teaching of certain disciplines or courses is organized in a foreign language, and foreign language training often has a professional and pedagogical orientation, which makes it a more communicatively focused and natural way of learning a language, since in this case a foreign language is used to transmit information;

- foreign language professional education has made a long way from focusing on reading professionally-oriented literature to focusing on communicative and competence-based orientation and preparing students for future professional and pedagogical activities;

- the current trends in the foreign language training of future biology teachers include the predominance of a competence-based approach, which allows the teachers to shift educational guidelines towards the development of readiness to

use the acquired competences in students' future profession; conditionality of the training under consideration by socio-economic, socio-pedagogical, methodological, research, socio-cultural, individual factors, as well as a factor of professional self-determination; the provision of regulatory documentation for its organization, the lack of communicative-oriented teaching aids, as well as the need to include communicative-oriented methods, techniques and teaching technologies in the process of foreign language training, taking into account the age, psychological and professional needs of students.

Conclusion 2. The analysis of the scientific and methodological literature on the research topic has made it possible to clarify the concept of foreign language-subject communicative competence of future biology teachers and to determine its structure and the criteria of its formedness.

Conclusion 3. The proposed methodological system of foreign language training of future biology teachers is a form of methodological support for the process of teaching future biology teachers for the formation of foreign language-subject communicative competence and consists of a model of foreign language training of future biology teachers, an educational and methodological manual "English for Biology Teachers" and a trilingual terminological dictionary developed by for biology students. Based on the learning technologies considered in the work, the Subject-Based Speaking technology has been proposed, its structure, requirements for the organization of work on this technology and the stages of working with it have been determined.

Conclusion 4. The results of experimental and pedagogical work to test the effectiveness of the methodological system of foreign language training of future biology teachers.

The research base: Faculty of Biology and Geography of Karaganda University named after Academician E.A. Buketov, educational program 6B01509 "Biology" (educational); Higher School of Natural Sciences of Pavlodar Pedagogical University, educational program 6B01550 "Biology".

Publication of research results. The content of the research has been reflected in 11 publications of the author, including in scientific publications included in the Scopus database - 1, in journals of the Committee for Control in the Sphere of Education and Science of the Ministry of Education and Science of the Republic of Kazakhstan - 3, in the materials of international scientific conferences - 5, in other publications - 2. A certificate of entry into the state register of rights to objects protected by copyright No. 18636 dated June 11, 2021 for the educational and methodological manual "English for Biology Teachers" has been received, too.

The research structure. The research consists of an introduction, two chapters, a list of sources used, applications that reflect the documents and materials of the research. The volume of the research is 142 pages, tables and figures included.