ABSTRACT

Of the thesis titled "Specific features of teaching professional foreign language communication to engineering students through Massive Open Online Courses" by Akhmetova Dinara Rashidovna, submitted for degree of Doctor of Philosophy (PhD)
6D011900 – Foreign language: two foreign languages

Relevance of research topic. In today's world, marked by rapid technological development, shifting economic conditions, and global political processes, there is a growing need to train professionals with a high level of professional foreign language competence. For technical universities, improving the quality of teaching professional foreign language communication is a key component of students' professional training. The emphasis on enhancing language skills is due to the requirements of international standards, which put communicative foreign language competencies on a par with technical and information skills.

In light of labor market globalization and the need to improve the quality of language education in Kazakhstan, a key priority is preparing competent, competitive specialists who possess foreign language proficiency relevant to their professional domains. This is especially important for future graduates of engineering programs with knowledge of English. The urgency of this task is highlighted in national strategic documents such as the Address of the President Kassym-Jomart Tokayev to the People of Kazakhstan "Unity of the People and Systemic Reforms – a Solid Foundation for Prosperity," the Concept of Higher Education and Science Development for 2023–2029, and the Concept of Digital Transformation, Development of the Information and Communication Technologies and Cybersecurity Industry for 2023–2029. These documents emphasize the need for competent training of personnel in the Republic of Kazakhstan [1-4].

Modern professionals must demonstrate intellectual and personal maturity, independence, creativity, and the ability to interact productively. Strong communication skills, including professional foreign language competence, are vital in their careers.

With the development of domestic industries supported by foreign investment and the expansion of international companies into the Kazakhstani market, foreign language proficiency becomes a key aspect of professional activity. Digital transformation in higher education and the rise of MOOCs, interactive platforms, and software provide new opportunities for integrating information and communication technologies, online resources into foreign language instruction for undergraduate students.

The use of MOOCs in teaching engineering students' professional foreign language communication represents a new methodological and technological approach. It enables a shift to an educational model based on information and communication interaction among all participants. This model fosters equitable, interactive relationships and gives instructors enhanced control and monitoring

capabilities. It also increases educational accessibility, removing barriers related to geography, social status, or finances.

According to the State Educational Standard of Higher and Postgraduate Education, one of the key objectives of foreign language instruction for non-linguistic undergraduate programs is developing professional and business communication skills in a foreign language. However, annual monitoring shows that students' foreign language competence remains insufficient. Factors include low communicative motivation, fear of making mistakes, and reliance on memorized patterns, which hinder independence and initiative.

This study addresses the justification and implementation of MOOCs as an effective didactic tool for teaching engineering students' professional foreign language communication.

The contradictions that define the relevance of the research are as follows:

–the demand for competent engineering professionals proficient in professional foreign language communication versus the actual low communicative competence of graduates;

– the need to actively use online resources and MOOCs versus the limited availability and integration of quality digital educational content in higher education;

– the wide availability of general language learning platforms versus the lack of specialized online resources for teaching professional foreign language communication to engineering students.

Based on these contradictions, the relevance of **research problem** and choice **topic** of the thesis «Specific features of teaching professional foreign language communication to engineering students through Massive Open Online Courses».

Aim of the research: develop and justify a model for teaching professional foreign language communication to engineering students using MOOCs.

Object of the research: the process of teaching professional foreign language communication to engineering students.

Subject of the research: teaching professional foreign language communication to engineering students through MOOCs.

Research hypothesis: if MOOCs become an integral part of the educational process, **then** the level of professional foreign language communication among non-linguistic universities students will improve, **since** the introduction of massive open online courses will create a professional environment and enhance the professional foreign language communication skills of non-linguistic universities students.

Research tasks:

– to clarify the concept of «professional foreign language communication for technical specialists;

– to analyze didactic potential of online resources and their application in developing professional communication skills;

– to design and justify a didactic model for teaching professional foreign language communication using MOOCs;

– to develop a MOOC for engineering students to improve professional language skills;

– experimentally test the effectiveness of the model in practice.

Research methods:

– the study uses theoretical methods (literature analysis, document review, modeling) and empirical methods (observation, surveys, interviews, testing, statistical analysis, pedagogical experimentation).;

– the study builds on theories in foreign language education, professional communication, communicative-cognitive approaches, informatization of language teaching, ICT integration, and MOOC-based pedagogy, based on the works of leading scholars from Kazakhstan and abroad.;

Theoretical and methodological basis of research was formed by provisions developed in works of Kazakhstani and foreign scientists in the field of:

– theory of Foreign-Language Education (E.I. Passov, S.S. Kunanbayeva, N.D. Galskova, N.I. Gez);

– theory of professional and communicative orientation of educational process in teaching foreign languages (P.I. Obraztsov, L.K. Geikhman, V.V. Pidorenko, M.Yu. Pidorenko, M.Y. Bukharkina, A.A. Zankov, O.F. Chernichenko, D.N. Asanova, G.K. Tleuzhanova, U.I. Kopzhassarova, etc.)

– problems of teaching foreign languages (S.S. Kunanbaeva, B.A. Zhetpisbaeva, G.K. Tleuzhanova, U.I. Kopzhasarova, A.L. Berdichevsky, L.A. Britkova, I.Yu. Bruslova, V.A. Votinov, N.D. Galskova, N.A. Belomytseva, O.I. Moskalskaya, N.V. Solovieva, S.K. Folomkina, O.I. Shubina);

– studies in the field of foreign language education informatization and information technologies application in the foreign language (A.N. Bagrova, M.A. Bovtenko, M.Y. Bukharkina, O.V. Vasilieva, A.Yu. Gorchev, M.G. Evdokimova, M.V. Tsyguleva , D.M. Dzhusubalinova , A.T. Chaklikova ,R.F. Zhussupova, D.D. Jantassova, G.K. Nurgalieva, Zh. Fisher, J. Paul, R.E. Saury, A. Taylor and etc.);

–information and communication technologies use in preparation for specialists' professional activity (Sh.A. Abdraman, B.A. Abdykarimov, R.CH. Bekturganova, E.S. Polat, V.P. Bespalko, Zh.Z. Janabayev, G.D. Zhangisina, A.K. Kozybay, T.I. Ustyantseva, S A. Ferna and etc.)

– fundamentals of Massive Open Online Course (MOOC) application (T.V.Semyonova, Symens, Downs, T.Y. Shelestova, A.N. Kalizhanova, Chiappe-Laverde, Hein and Martinez-Silva, Kovanovic, Joksimovic, Gashevic, Hatala, Roswell, Jansen, Palacios Hidalgo).

Works of above-mentioned authors in general represents the ideas of what should be taught to future specialists of technical universities in the era of foreign language education digitalization and provide general theoretical knowledge for young generation of scientists.

Experimental research base: Non-profit Joint Stock Company Abylkas Saginov Karaganda Technical University, Foreign Languages Department (Karaganda, Kazakhstan).

Research organization and main stages: Study was conducted in four stages for period of 2018-2021:

First stage of research (September, 2018 – February, 2019). There was studied problem, there was carried out collection, analysis, synthesis and systematization of theoretical material on the studied problem, scientific apparatus of study was developed, «professional foreign-language communication in the professional activity of technical specialists» concept was disclosed.

Second stage of research (March, 2019– March, 2020). Scientific apparatus of study was specified, didactic opportunities of online resources were analyzed and peculiarities of their use were identified, contributing to students' professional foreign-language communication development of technical universities.

Third stage of research (April, 2020 – December, 2020). Mass Open Online Course (MOOC) on «Professional-oriented foreign language» discipline was developed.

Fourth stage of research (January, 2021 – April, 2021). Didactic model of professional foreign language communication teaching via Massive Open Online Courses (MOOCs) in discipline «Professional-oriented foreign language» was designed and developed model effectiveness in teaching professional foreign language communication using MOOCs was experimentally tested.

Scientific novelty of research is:

– concept of «professional foreign language communication in professional activity» has been clarified;

– the didactic potential of online resources in teaching professional foreign language communication has been identified;

– for the first time in Kazakhstani pedagogical science, the specific features of teaching professional foreign language communication to engineering students through MOOCs have been identified.;

– the didactic model for the process of professional foreign language communication teaching through MOOCs was substantiated and experimentally validated;

Theoretical significance of research lies

– the concept of "professional foreign language communication in the activities of technical specialists" has been clarified within the context of the digital educational environment;

– the specific features of using online resources, particularly MOOCs, in teaching professional foreign language communication to students at technical universities have been revealed;

– the didactic potential of teaching professional foreign language communication using online resources (MOOCs) has been substantiated;

– the specific features of applying online resources, particularly MOOCs, in teaching professional foreign language communication to students at technical universities have been examined.

Practical significance of research:

– MOOC «Professional English for Metallurgy Students» for «Metallurgy» specialty № 8504 from 15.12.2020, Abylkas Saginov KarTU was developed;

–basic version of electronic textbook «Professional English for Metallurgy» for «Professional-oriented foreign language» discipline was developed and certified. Certificate of inclusion of information in the state register of rights to copyrighted objects № 25121 dated April 14, 2022;

– developed and published textbook (under REMC grip) «Professional English for STEM students», Karaganda: KSTU publ., 2023. - 212 p.

Approbation of research results. Content of PhD thesis was reflected in 8 author's publications, including in scientific publications included in Scopus database - 1, in publications recommended by CQASHE MSHE RK - 3, in proceedings of international scientific conferences - 3, other publications – 1. In addition, mass open online course (MOOC) «Professional English for Metallurgy students» was developed and certified, certificate № 8504 from 15.12.2020. The basic version of electronic training manual «Professional English for Metallurgy» on discipline «Professional-oriented foreign language» was developed and certified. Certificate of information inclusion in state register of rights to copyrighted objects № 25121 dated April 14, 2022 was approved in mode of experimental and pedagogical work on KarTU basis, Karaganda. «Professional English for STEM students». Results, conclusions and recommendations obtained within the research can be applied to teaching materials and practical classes design in «Professional-oriented foreign language» discipline. Massive open online courses can be implemented in educational process as additional teaching material for professional foreign language communication development. The course focuses on current trends at present time and is based on authentic texts from foreign scientific and technical journals and Internet resources. This textbook (under REMC grip) «Professional English for STEM students" can be used as a primary or supplementary textbook in classes of professional-oriented English, which contains modern digital tools, such as QR codes for instant access to online resources, as well as artificial intelligence, which provides generation and playback of audio materials corresponding to professional topics of the texts. The main purpose of this textbook is to help students master professional terminology and to develop the ability to use language material in professional foreign language communication with foreign specialists.

The main provisions submitted for defense:

1. Professional foreign language communication in the activities of technical specialists is a targeted communication process that ensures the exchange of professionally significant information in a foreign language within the framework of solving production and project tasks. Its essence lies in the ability to effectively interact in a foreign language environment, taking into account the requirements of technical communication, industry standards, the specifics of the technologies used and cultural diversity, which is the essence of professional foreign language communication

2. MOOCs have significant didactic potential and are an effective means of developing professional foreign language communication of non-linguistic universities students. Their use contributes to the achievement of key educational goals - increasing the effectiveness of training, increasing motivation, personalizing the educational process and activating educational activities. The features of the use

of MOOCs include the ability to adapt the content to the level of training of students, flexible visualization of material, individualization of approaches and stimulation of creative and communicative activity in the process of mastering a foreign language in a professional context.

3. The model of teaching professional foreign language communication using MOOC in the discipline "Professionally-oriented foreign language" includes the following interacting main blocks: analytical, criterion-diagnostic, content, practical, reflexive-evaluative, and result-based. All elements of the model are interconnected and interdependent, ensuring an increase in the level of professional foreign language communication of students in engineering educational programs.

4. Experimental verification of the effectiveness of the designed didactic model for teaching professional foreign language communication to students of engineering educational programs using the developed MOOC is an effective tool in the educational process.

Structure of the dissertation.

The work is presented in the form of a dissertation consisting of 115 pages. The structure includes an introduction, two main sections, a conclusion and a list of references. In addition, the dissertation is supplemented by appendices. The text contains 26 tables, 17 figures, 143 bibliographic sources.