

LJUBLJANA SCHOOL OF BUSINESS

Proceedings of the 2nd International Scientific Conference

EASTERN EUROPEAN CONFERENCE OF MANAGEMENT AND ECONOMICS

Environmental Management and Sustainable Economic Development

May 29, 2020

**EECME 2020
Ljubljana 2020**

LJUBLJANA SCHOOL OF BUSINESS
(Slovenia)

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AND ECONOMICS OF KYIV
NATIONAL UNIVERSITY OF
TRADE AND ECONOMICS**
(Ukraine)

**COLLEGE OF COMPUTER
SCIENCE AND BUSINESS
COMMUNICATIONS
EMPIRICA**
(Bosnia and Herzegovina)

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ASSESSMENT OF ENGINEERING STUDENTS ON THE FORMED FOREIGN LANGUAGE PROFESSIONAL COMMUNICATION CULTURE

Abstract. *The study intends to contribute to the issue of developing in engineering students the ability to apply gained knowledge in future professional activities. Generalisation of practical experience of foreign languages teaching at engineering faculties of Ukrainian universities has made it possible to distinguish particular problems: insufficiently developed teaching and methodological provision; inefficient organisation of classroom and independent work of students; poor motivation of non-language faculty students for the foreign language professional communication, etc. In this study it has been proved that the following pedagogical conditions impact the formation of foreign language professional communication culture of engineering students: organisational and managerial support of its formation process; integration of communicative-context and competency-based approaches in the educational process; professional-ethical and social-cultural orientation of its formation process. The results of the study have demonstrated the positive dynamics of indicators of foreign language professional communication culture formation of engineering students. If at the beginning of our experimental work 12.7% of students of the experimental group demonstrated the high level of formation of culture, then at the end of the forming experiment this indicator increased almost twice – 23.6%. At a low level, the proportion of students of experimental group decreased by 14.5%.*

Keywords: *culture, foreign language professional communication, engineering students.*

Introduction.

The process of modernisation of the Ukrainian education system actualises the problem of improvement of higher education quality. There seems to be no reasons to disagree that to improve its quality the only increasing of the scope of students' knowledge in the specialty is not enough. The centrality of this issue is also the ability of graduates to apply their knowledge in future professional activity, the ability to communicate in foreign languages with professionals from other countries, as well as to carry out professional activities in the foreign language environment. Thus, Government Science and Engineering [4], Lawlor [7], Stewart [13] put the claim that foreign language competence becomes a significant component of professional competence of future specialists.

In recent years, the methods and technologies of educational process and training of specialists in Ukrainian universities have significantly changed. The training of a modern engineer is aimed to develop the cognitive abilities, outlook, morality, and professional culture of an individual. As confirmed by Davis [2], Morozova [9], National Academy of Engineering of the National Academics [11], Weichert and Rauhut [15] the essence of linguistic-educational process in domestic and foreign universities is to integrate the study of subjects in specialty and foreign language, which serves as a means of education and formation of readiness of future engineers for professional activities in the united information environment.

Alexandrov [1] puts forward the view, based on the results of survey of the International Charitable Organization for the Improvement of Education in Ukraine, that 70% of employers believe that graduates of universities have no sufficient skills to use a foreign language for professional communication. On logical grounds, the growth of the role and significance of a foreign language in conditions of the European integration educational space contributes to the defining of priority tasks in the content of engineering students training, among them – the formation of culture of foreign language professional communication (CFLPC).

Despite the considerable interest of scientists (Gordienko [3], Makoyed [8], Rukas [12], Sukachova [14]) to the above-mentioned problems, it is believed that the further research in this area may include the issue of realisation of pedagogical conditions necessary for the formation of CFLPC of engineering students.

In the latest research on the problem under consideration (Kish & Kanyuk [6]) pedagogical conditions for the formation of CFLPC in engineering students (organisational and managerial support of the process of its formation; integration of communicative-context and competency-based approaches in the educational process; professional-ethical and social-cultural orientation of the process of its formation) have been defined and the model of CFLPC formation has been provided. The *purpose* of this study is to substantiate and experimentally verify the effectiveness of the proposed model of formation of CFLPC of engineering students under selected pedagogical conditions.

Research Methods.

A mixed methods design has been applied in this study that is the class of research where researchers mix or combine quantitative and qualitative research techniques, methods, approaches, concepts or experiments into a single study, providing a comprehensive analysis of the phenomenon under study (Johnson & Onwuegbuzie [13]). Methods of analysis, synthesis, generalisation have been used to clarify the nature and components of the structure of CFLPC, to define the criteria and indicators for the determining of the levels of CFLPC formed. Interviews, testing have been used to define the level of CFLPC formed in engineering students. Pedagogical experiment was used to verify the effectiveness of pedagogical conditions chosen. Statistical methods were used for quantitative and qualitative analysis of results obtained and their processing.

The experimental work has been carried out in stages:

- 1) clarified the components of the structure of CFLPC, defined the criteria, indicators and levels of formed CFLPC (January 2017 – February 2017);
- 2) defined the content, specific forms, methods and means of teaching, drew up the experiment programme, selected control and experimental groups (March 2017 – September 2017);

3) carried out the pedagogical experiment on provision of the learning procedure to students aimed at formation of CFLPC under proposed organisational and pedagogical conditions (September 2017 – May 2018);

4) defined the level of formed CFLPC in students and processed the data obtained (May 2018).

Data have been collected from 102 engineering students of Uzhhorod National University, Ukraine. 47 students of specialties “Building and construction”, “Electronic devices and systems” formed the control group (CG); 55 students of specialties “Engineering mechanics”, “Instrumentation” – the experimental group (EG). The educational process in CG was carried out with traditional methods of teaching, in the EG – under defined pedagogical conditions.

Research Results and their Discussion.

In the study the CFLPC is understood as an integral quality of a future specialist, which reflects the degree of possession of peculiarities of speech / non-speech behaviour of native speakers in certain professionally adequate situations of communication.

Mozharovska [10] has generalised scientific approaches to the determining of structure of readiness of specialists for foreign language communication. Thus, in this study the structure of CFLPC of engineering students has been defined as having the following *components*:

– motivational-value competence – implies the possession by a student of: value orientations, positive motivation and attitude towards the study of a foreign language, interest in it; understanding its importance in future professional activities; desire for professional and personal growth in the process of studying a foreign language;

– linguistic competence – reflects knowledge of vocabulary, grammatical forms formation; construction of meaningful phrases; ability to choose grammatically correct forms and syntactic structures, to understand semantic language segments, to use them the way native speakers do;

– professional foreign language – is based on knowledge of professional terminology, on ability to use it to solve professionally directed tasks in a foreign language environment;

– social-cultural competence – reflects knowledge of customs, traditions, culture of people whose language is studied; ability to use this knowledge in adequate situations of interaction;

– cultural-ethical competence – foresees knowledge on cultural-ethical norms and rules, which regulate the professional interaction in a foreign communication environment; ethics of business communication; experience of such interaction in situations close to professional ones.

The determined components of the structure of CFLPC have given the grounds to provide pedagogical conditions of its formation, which optimise: – the content of foreign language teaching, related to the realisation of goals and objectives of formation of CFLPC of engineering students (development of methodological provision: curricula, manuals, methodological recommendations, etc.); – the procedural component of formation of CFLPC and self-training of future engineers, which involves the use of innovative teaching methods; – the management of the process of mastering of knowledge system by students. Thus, in this study the view, that the following pedagogical conditions impact the formation of CFLPC of engineering students, has been put forward:

1) organisational and managerial support of the process of formation of the CFLPC. Implementation of *the first pedagogical condition* is connected with the formation of professional-value motives of future engineers through the implementation of organisational and pedagogical support of the process of formation of CFLPC: development of teaching and methodological

provision; management of educational and cognitive activities of students; organisation of independent search work, etc. Qualitative and quantitative assessment of the formed CFLPC of future engineers, based on the motivational-value criterion, allows checking the effectiveness of the implementation of the first condition.

2) integration of communicative-context and competency-based approaches in the educational process. The implementation of *the second condition* involves the organisation of the educational process by the communicative-context and competency-based type, which is intended to ensure the dialogisation of teaching in the professional sphere. Main condition for the foreign language communication is linguistic competence. Main indicator and the result of contextual education is the possession of foreign professional terminology and the ability to use it in situations of professional communication. Thus, qualitative and quantitative assessment of the formed CFLPC of future engineers, based on the criteria of linguistic competence and professional foreign language competence, allows checking the effectiveness of the implementation of the second condition.

3) professional-ethical and social-cultural orientation of the process of formation of CFLPC of future engineers. Implementation of *the third condition* includes the enriching of the material in modelled situations of foreign language professional communication with social-cultural and cultural-ethical content. Thus, qualitative and quantitative assessment of the formed CFLPC of future engineers, based on the criteria of social-cultural and cultural-ethical competencies, allows checking the effectiveness of the implementation of the third condition.

The verification of the effectiveness of substantiated and implemented in the educational process of above-mentioned pedagogical conditions involves the selection of criteria and indicators that allow assessing the formation of CFLPC of future engineers at the specified levels (Table 1).

Table 1. Criteria, indicators and methods of formed CFLPC of engineering students

Criteria	Indicators
motivational-value competence	awareness of the need to: study a foreign language; deepen interest in the profession chosen; possess the CFLPC for the future successful employment, incl. abroad; demonstrate the possession of cognitive and socially significant motives, settings, value orientations
linguistic competence	correct verbal and written speech; stylistically competent processing of papers, presentations; comprehension of texts and reproduction of main content; correct use of tense forms.
professional foreign language competence	possession of: professional terminology, vocabulary; ability to use it in situations close to professional; communicative tactics of foreign language professional communication and their use in solving of professionally-directed tasks.
social-cultural competence	possession of: knowledge on culture, customs, traditions, outstanding personalities, cultural differences of the country, the language of which is being studied; speech for the disclosure of social-cultural information; the culture of foreign language written and oral communication with the use of social-cultural information.
cultural-ethical competence	possession of: knowledge of ethics and culture of professional communication, skills of communicative tactics and their use in oral and written forms of business communication; skills of organising the foreign language communicative interaction in modelled situations of foreign language professional communication

Source: developed by authors.

Under the levels of CFLPC a certain degree of development of the communicative ability of an individual is understood in terms of effectiveness of implementation of foreign language professional communication in modelled situations of interaction. The evaluation of effectiveness of proposed pedagogical conditions for the formation of CFLPC according to criteria chosen has involved the selection of the following levels.

Students with the *high level* (almost perfect) possess:

- literate oral and written speech (correct word formation and construction of sentences, tense forms use; logical connectivity in statements; lexical richness; monologue, dialogical speech);
- social-cultural knowledge (countries and cities; famous domestic and foreign personalities, national heroes, scientists, inventors; the life of students – future engineers; national symbols, traditions, important historical events; proverbs and sayings);
- professional terminology (names of parts, mechanisms, devices, installations, technological processes, schemes, models, etc., in: analysing and explaining the features of a particular device or installation; explaining the essence of diagnostic procedures for elimination a variety of malfunctions in the work of technical objects; in the process of work on an individual project or in the fulfilment of the tasks of independent work, participation in group forms of work);
- knowledge of ethics and culture of professional communication, skills of communicative tactics and their use (in writing: a resume, annotations to course projects, referencing on the theme of the course project, an application, an explanatory note, a cooperation agreement, any other business correspondence; in an interaction while working on group projects; in the presentation of individual projects; in decision taking on solving the professionally directed problems in a business game);
- expression of social (awareness of the role and importance of learning a foreign language for the further professional activity, career development, employment, internship abroad, participation in joint Ukrainian-foreign projects) and cognitive (activeness in educational and cognitive activity, initiative, aspiration to succeed in all kinds of foreign-language activities, a responsible attitude to the tasks of various levels of complexity, including creative ones) motives, value orientations (focus on self-perfection attitude, on creative level of expression of cognitive activity).

Students with the *average level* possess:

- literate oral and written speech (see *high level*), at the same time a student makes minor mistakes (sometimes mechanical, sometimes non-blunder spelling and stylistic mistakes), but correct them independently;
- social-cultural knowledge (see *high level*), nevertheless, knowledge possessed is rather unconvincing;
- professional terminology (see *high level*), but make mistakes in using the terminology both in the process of work on an individual project, the performance of tasks of independent work, during participation in the group work;
- knowledge of ethics and culture of professional communication, skills of communicative tactics and their use (see *high level*), but make minor mistakes, experience difficulties in expressing arguments or logical evidence; when using the communicative tactics of business and professional communication, students make mistakes in the choice of speech strategy, in the construction of dialogical speech;

– developed expression of social and cognitive motives, value orientations. These students possess the ability to learn a foreign language relatively quickly, but need to study hard due to the lack of diligence, responsibility, discipline, time-management.

Students with the *sufficient level*:

– make systematic mistakes in both oral and written speech, do not operate sufficient vocabulary, and the possession of professional terminology is difficult;

– do not fulfil the tasks foreseen by the curriculum, and therefore experience difficulties both during the work on individual projects and in the process of group interaction;

– generally possess social-cultural knowledge, but during compilation of narrations, complex sentences are avoided, simple constructions are used, tense forms are used with inaccuracies;

– possess knowledge of ethics and culture of professional communication, skills of communicative tactics and their use, but make numerous mistakes in the practical application of theoretical knowledge;

– give preference (in the motivational sphere) to the motives of the material-household significance; their cognitive activity is not marked by the high activity;

– perform tasks for marks, for rating, select tasks of reproductive level, very rarely – productive;

– are not responsible, disciplined, diligent. Their failures in the study of a foreign language are explained by the lack of time-management, skills, focus on the study of professionally specialised disciplines only.

Students with the *low level* are characterised as students who cannot (due to lack of ability to study a foreign languages) and do not want to work on themselves, do not systematically perform the tasks foreseen by the curriculum, possess a poor lexical vocabulary, do not know how to write and read competently, understand texts poorly and display superficial social-cultural knowledge. These students do not associate their future professional activity with the study of a foreign language and therefore do not attempt to master the systematic knowledge of ethics of business communication and CFLPC. There is a close connection between the low level and the sufficient level of education and low general culture of speech. In the motivational sphere, the pragmatic motives dominate (to have a positive mark or higher rating). Professional interests are reduced to obtaining a diploma. Educational activity is carried out at the reproductive level. Among personal qualities we see lack of: responsibility, discipline, diligence; ability to concentrate on tasks or on oneself. To this level we refer students who because of lack of general educational skills, low level of foreign language proficiency at the time of entering the university do not succeed in learning a foreign language in general, and the assimilation of CFLPC content in particular.

It is worth while mentioning the particular feature of experimental work in the process of learning a foreign language – it is obvious, that it is almost impossible to precisely define the boundary between the levels of CFLPC possession. If to compare the study of a foreign language with other disciplines, then each of discipline has certain thematic sections, after studying of which the future specialist can assume that he/she knows them. When studying a foreign language, this situation is impossible, because a student is to have the necessary sum of knowledge for professional communication.

Another feature is that the mastery of a foreign language involves the formation of automatisms, on the basis of which complex types of speech activities (listening, speaking, reading, and writing) are carried out in the absence of linguistic environment and real foreign language communication needs. The selection of qualitative criteria and indicators of the effectiveness of implementation of pedagogical conditions for the formation of CFLPC establishes the prerequisites for the transition to quantitative characteristics. The distribution of the levels of CFLPC formed during recording and forming experiments for each of criteria selected is presented in the Table 2 and Table 3.

Table 2. Recording experiment

Criterion	High level		Average level		Sufficient level		Low level	
	CG	EG	CG	EG	CG	EG	CG	EG
motivational-value competence	10.6	16.4	38.3	43.6	38.3	27.3	12.8	12.7
linguistic competence	8.5	10.9	23.4	25.5	36.2	32.7	31.9	30.9
professional foreign language competence	6.4	7.3	29.8	30.9	34.0	38.2	29.8	23.6
social-cultural competence	10.6	12.7	27.7	27.3	42.6	45.5	19.1	14.4
cultural-ethic competence	2.1	3.6	29.8	30.9	42.6	43.6	25.5	21.8

Source: developed by authors.

Table 3. Forming experiment

Criterion	High level		Average level		Sufficient level		Low level	
	CG	EG	CG	EG	CG	EG	CG	EG
motivational-value competence	14.9	21.8	42.6	58.2	34.0	20.0	8.5	0.0
linguistic competence	8.5	34.5	27.7	36.4	34.0	12.7	29.8	16.4
professional foreign language competence	8.5	21.8	34.0	41.8	36.2	30.9	21.3	5.5
social-cultural competence	12.8	25.5	31.9	40.0	40.4	25.5	14.9	9.1
cultural-ethic competence	4.3	20.0	38.3	41.8	44.7	38.2	12.8	0.0

Source: developed by authors.

Generalised results of the experimental work on the formation of CFLPC of engineering students are provided in the Table 4.

Table 4. Dynamics of the levels of CFLPC formed of engineering students

Levels	Groups	recording experiment		forming experiment		Dynamics %
		number of students	%	number of students	%	
High	CG	5	10,6	7	14,9	4,3
	EG	7	12,7	13	23,6	10,9
Average	CG	10	21,3	14	29,8	8,5
	EG	15	27,3	26	47,3	20
Sufficient	CG	16	34	17	36,2	2,2
	EG	16	29,1	7	12,7	-16,4
Low	CG	16	34	9	19,1	-14,9
	EG	17	30,9	9	16,4	-14,5
Total	CG	47	100	47	100	
	EG	55	100	55	100	

Source: developed by authors.

Conclusions.

In the course of this study it has been proved that the pedagogical conditions chosen positively effected the CFLPC formation of engineering students. The processing of the results of the forming experiment demonstrated that a large proportion of engineering students of EG possessed high (23.6%) and average (47.3%) levels of CFLPC formed. The proportion of students in the EG with sufficient level (by 16.4%) and low level (by 14.5%) decreased. Thus, experimental work was proved to be effective, the process of CFLPC formation of engineering students gave positive dynamics in the level of success of students in the EG. Further research in this area may include the issue of improvement of content and tasks of independent work in mastering of the CFLPC formation.

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