

## **IMPROVING THE TECHNIQUE OF DEVELOPING COMMUNICATIVE COMPETENCE OF STUDENTS OF AN ENGINEERING UNIVERSITY**

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**Abstract:** This research article investigates the problem of the formation of students' communicative competence by determining didactic facilities of social and humanitarian disciplines studied at an engineering university. Moreover, the article demonstrates the technique developed for the formation of the communicative competence of students of an engineering university, which has been worked out in the research process.

**Key words:** engineering university, competence, communicative competence, terminological competence, communicative skills.

**Introduction:** Within the framework of developing contemporary society, the faculty and academic instructors have been set the aim to become active participants in social processes that determine their worldview and content guidelines. The requirements set by the society for a modern teacher, who have high professional skills and possesses advanced teaching technique, are extremely high. They include not only a wide range of fundamental and innovative knowledge in subject areas, mastery of modern pedagogical technologies, but also a number of the most essential personal qualities, such as: self-support, responsibility, the ability to be self-organized, self-improvement, creative self-realization in various types of professional activity, etc. These aspects are reflected in the content of the contemporary education, which dominant feature is development of new foundations of the educational process, ensuring training of a competent specialist who is able to efficiently solve the set practice-oriented tasks.

The main idea of introducing new educational standards, implying a competence-based approach, is that a graduate shall meet certain market expectations, as well as quickly adapt to changing conditions and demonstrate high efficiency in professional activities. In this regard, one of the top-target priorities of current higher

education is to master professional language in terms of the development of communication skills. Therefore, communicative competence, along with the terminological competence of the corresponding field of knowledge, traditionally acts as an indicator of the quality of assimilation of educational material within the educational process, and its active use in communication among professionals contributes to mutual understanding and cooperation in the exchange of experience.

**Literature review.** The issues of communicative competence have been researched by many scholars who have tried to understand the problem of the competence-based approach. The role of communicative competence of a specialist-graduate of the engineering university is very considerable. The analysis of the employer's requirements for a modern specialist has demonstrated that currently there is an urgent need for specialists who have not only special knowledge and skills, but also have special supra-professional qualities, i.e. communicative competencies. D. Hymes was one of the first to determine communicative competence, defining it as "internal knowledge of the situational relevance of language, as the ability to be a participant in speech reality" (Volkov, 2008).

Within the framework of contemporary education, when realizing the goals, objectives, essence and its results, the priority role is assigned to the competence-based approach, which basic concept is simply "competence". The competence of a specialist is manifested as a requirement for a professional to act independently and responsibly, guided by his rights, obligations and the area of professional tasks to which all the necessary powers apply. (Shishov, 2002).

The essence of competence is determined through skills by J. Raven, V. Hutmakher. Herewith, according to the explanatory dictionary of the Russian language the "essence" of something is interpreted as a core (Raven, 2002).

The "competence" concept of is associated with a specific type of activity. The specificity of the activity performed assumes that a person possesses certain types of competencies. A.K. Bolotova, Yu.M. Jukov, L.A. Petrovskaya consider skills as a compulsory component of any kind of competence (Petrovskaya, 2002).

Studies conducted by A.M. Pavlova, E.E. Symaniukhave demonstrated that skills are the dominant feature in the structure of communicative competence. A.K. Yerofeev, S.A. Lipatov and I. Ya. Zimnyaya emphasize the universality of communicative competence, and determine it as cross-cutting, core, not only included in various types of competencies (professional, social, interpersonal, etc.), but also connecting them (Zimnyaya, 2006).

In reliance upon the considerations specified above, we think that communicative skills constitute the “core” of communicative competence. This point of view is considered of particular importance, since only skills are amenable to observation, fixation, and evaluation (Emelyanov, 2006). This provides grounds to consider the process of developing communicative competence through the management of the communicative skills development.

Within the framework of current educational policy, a graduate of an engineering university must be ready for innovative engineering activities - the development and creation of new technologies, marketable products that provide a new social and economic effect, and, consequently, the competitiveness of all created products. In the opinion of I.N. Zotova, representatives of the “man-technician” professions manufacture material products of labor, types, forms of energy, create various conditions and objects of the human environment, means of their existence and development (Zotova, 2006).

From the point of view of N.V. Solomina, the communicative competence “reflects the level of mastery of skills and communication skills” (Solomina, 2007). A. Zaharova supposes, that the communicative competence of students implies timely use of a set of communicative skills, knowledge of the rules of speech behavior, contributing to the solution of non-standard algorithms for communicative problems in interpersonal relations (Zaharova, 2006). It is obvious that there is a sufficient number of interpretations of the concept of “communicative competence”, however, in our opinion, they are all similar. From our point of view, by “communicative competence” will imply the entire set of knowledge, skills and abilities that provide competent communication, appropriate in various communicative situations. In addition, communicative competence involves mastering all types of speech activity and the basics of the culture of oral and written speech, basic knowledge and skills of using the language in vital spheres and situations of communication.

**Research Methodology.** In reliance upon the goals and objectives of this research article and with the aim of developing communicative competence of students of an engineering university, such research methods as observation, pedagogical experiment, comparison, analysis and synthesis have been widely used.

**Analysis and Results.** Engineering activity involves solution of arising production problems and consists of activities, operations, interaction of specialists of various levels and profiles. Such types of engineering and technical activities as project, design, production and technology, etc. are implemented in direct contact with people.

Therefore, a significant requirement for the implementation of engineering activities is the ability to organize productive interaction, which will contribute to the achievement of a socially valuable result.

From our point of view, the communicative competence of a student of an engineering university is perceived as an integral characteristic of the professionally and personally significant qualities of a student of an engineering university, reflecting the level of his knowledge, skills and experience in organizing productive interaction to achieve an optimal result in specific conditions of educational activity, to develop and create competitive products in future professional activities, innovative projects and technologies, which determine the socio-economic progress of the society (Shishov, 2002).

Our understanding of the structure of the communicative competence of students of an engineering university is based on the fact that the core of communicative competence are communicative skills, which development constitutes a compulsory condition for training specialists. In addition to the core, we single out personal-motivational, cognitive, operational-activity components as structural components of the communicative competence of students of an engineering university.

To develop the technique for developing communicative competence of students of an engineering university, we have planned and implemented the pedagogical study arranged on the basis of the Branch of the Russian State University of Oil and Gas (National Research University) named after I.M. Gubkin in Tashkent. The study involved 180 1st-3d year students of the faculties “Oil and Gas Business”, “Economics of Enterprises and Organizations”, “Production Management”. With the aim of arranging the research, an experimental group (EG) consisting of 90 people and a control group (CG) consisting of 90 people have been formed.

According to the standard curricula in the engineering university, in addition to academic subjects on the specialty (technical disciplines), social and humanitarian disciplines are studied as well. The list of social and humanitarian disciplines that provide the required level of communicative competence of students of an engineering university has been determined on the basis of a survey of fourth-year students of the Branch of the Russian State University of Oil and Gas (National Research University) named after I.M. Gubkin in Tashkent, who had successfully accomplished these academic subjects, analyzing curricula and the content of academic programs in social and humanitarian disciplines in order to identify their opportunities for the formation of communicative competence and taking into account the opinions of lecturers of these academic subjects.

The following academic subjects: Russian language, cultural studies, foreign language (English), philosophy, history of the oil and gas industry, psychology, and sociology have been distinguished as social and humanitarian disciplines that have the greatest opportunities for the formation of the communicative competence of students of an engineering university.

Comparative analysis of the pilot study results, analysis of standard curricula for a number of engineering specialties of an engineering university and consideration of communicative skills as the core of communicative competence have enabled to identify the peculiarities of its formation in the conditions of an engineering university. In particular, such factors have been revealed: the level of communicative skills development of first-year students of an engineering university is lower than that of their peers who have chosen humanitarian sphere of activity; the natural predominance of engineering subject areas in the educational process of a technical university which study does not assume communicative competence development at the high level; lack of ways and means of developing communicative competence of future engineers in the current practice of professional education at the engineering university.

The communicative competence development of students of an engineering university occurs within the initial, normative and optimal levels. The generalized characteristics of each level are determined in reliance upon the selected criteria of communicative competence. Herewith, the shift to a new, higher level of communicative competence is impossible without mastering the previous ones.

The communicative competence development of students of an engineering university within the framework of the essential characteristics specified above, can be ensured in the educational process by creating appropriate didactic facilities. These conditions are the following: targeted creation of a communicative environment; ensuring the interiorization of the social experience of interaction into the personal experience of the subject of knowledge; implementation of the integrated development of communication skills as the core of communicative competence. Managing the development of communication skills of students of an engineering university is considered both as an obligatory component that determines the development of the communicative competence of students of an engineering university, and as an activity for the rational use of the didactic potential of social and humanitarian disciplines, all methods, types and forms of organizing educational activities which can ensure development of the communicative competence of students of an engineering university.

The structure and content of communicative competence, the peculiarities and conditions of its development in an engineering university in the process of studying social and humanitarian academic subjects have enabled to shift to the development of the technique for developing communicative competence of students of an engineering university. In reliance upon the research results, we have proposed an invariant technique for developing communicative competence of students of engineering universities.

In reliance upon the study of the definitions of the concept of communicative competence of students of an engineering university, we have identified the criteria and indicators of the studied phenomenon within the framework of the communicative competence development technique.

Each stage contains multifaceted activities aimed at developing the communicative competence of a future specialist. The essence of the *propaedeutic stage* is targeted training of the lecturers of social and humanitarian academic subjects in order to intensify the activity on the development of the communicative competence of students of an engineering university. At the stage of *diagnostic goal-setting*, the initial state of the formation of personal properties and qualities is identified, mediated by knowledge of the basics of communicative interaction, communicative skills and constituting the essence of the communicative competence of students of an engineering university; determination of the goals and objectives of the activity on the development of the communicative competence of students of a technical university in the process of mastering social and humanitarian disciplines within the framework of the studied sections, subject areas, specific training sessions. The *content-procedural* stage involves a wide range of knowledge in the field of communication, interaction; construction of didactic conditions through the content of social and humanitarian academic subjects; systematic use of group, collective forms and technologies for organizing educational activities, active, interactive methods of organizing educational interaction; management of the development of communication skills of students of an engineering university. The *assessing-productive* stage involves identifying the dynamics of the development of the communicative competence of students of an engineering university in the process of studying social and humanitarian academic subjects and assessing the efficiency of the work completed. The tasks of the *reflexive-correctional* stage include analysis, generalization of the results obtained, formulation of conclusions, recommendations, assistance to students in developing an individual program for self-improvement of personal and professional qualities that constitute the basis of the communicative competence of a future specialist.

The efficiency of the technique developed is confirmed not only by quantitative changes (4.5% of students have an initial level of communicative competence in the experimental group, 19.7% - in the control group, the normative level accounts for 28.3% in the EG and 57.5% in the CG, the optimal level shall equal to 72.8% in the EG and 30.6% in the CG), but also with qualitative modifications in all structural components of the communicative competence of students of an engineering university in the process of the implementation of the technique for the formation of communicative competence of students of an engineering university in the process of studying social and humanitarian academic subjects (Table 1).

**Table 1**

**Analysis of the dynamics of the indicators of developing communicative competence  
among students of the experimental group\***

Criteria	Indicators	Intensity degree	
		Diagnostic experiment	Control experiment
Personal	Communicability	They are sociable, but they converge with new people with caution, they are reluctant to participate in disputes, arguments, they do not have enough perseverance, patience, courage when faced with serious problems	They strive to establish new business and friendly contacts, do not limit the circle of their acquaintances, they are characterized by ease of behavior in a new team, correlate their own opinion with the opinion of others, combine personal plans with the plans of the team
	Orientability	Desire for personal superiority and prestige prevails, are prone to rivalry, impulsive, irritable	They are focused on joint activities, business cooperation, work in a team (group), are able to independently make decisions and be responsible for their consequences; reflect on the activities performed and personal contribution to the solution of the problem
	Empathy	Demonstrate the inability to comprehend the causes and consequences of the self-manifestations of another person, predict his behavior and adequately react in the current situation of interaction	Can put themselves in the place of the companion, while predicting and adequately influencing his behavior; sensitive to the needs and problems of others; emotionally responsive; tolerate criticism well; in assessing events, they trust their feelings and intuition more than analytical conclusions

\* Developed by the author based on the pedagogical experiment



Practice-oriented	Ability to actively listen and show interest in information coming from a partner; possession of non-verbal communication means; ability to create an atmosphere of cooperation	Tend to make hasty judgments, focus on the manner of speaking, pretend, look for the hidden meaning of what was said, monopolize the conversation. Prevailing ways of resolving conflicts: avoidance, accommodation, competition	Actively strive for communication activities; fast orientation in difficult situations is characteristic; clearly and reasonably defend their position; know how to find a rational solution to the problem posed; disputable issues are resolved on the basis of a compromise; they are creative in completing tasks; are able to understand the emotional state of another person by external manifestations
Cognitive	Knowledge about communicative interaction, experience in operating with this knowledge	Knowledge in the field of interpersonal interaction is used at the level of reproduction and intuition	Complete the tasks at a constructive, and in some cases at a creative level; communicative actions are performed in reliance upon a wide range of knowledge of the structure of the communicative process, stages of solving a communicative task, the basics of interaction management, algorithms of behavior in a specific situation; knowledge of communication styles

It should be noted, that communicative competence implies the level of mastering certain knowledge, skills and abilities. Therefore, in order to achieve an educational result, a system of diagnostics and assessment of the formation of communicative competence is required. The analysis of the academic literary sources and study packs has shown that at the present stage, this system does not exist for academic disciplines taught in the framework of the academic curriculum for the specialists in engineering. In this regard, we propose the system of assessing of the communicative competence development, which has been worked out at the Branch of the Russian State University of Oil and Gas (National Research University) named after I.M. Gubkin in Tashkent within the framework of “English” academic subject. It includes diagnostics of each component of communicative competence. Thus, the diagnosis of linguistic competence includes an essay with a grammatical task aimed at identifying knowledge and skills in the area of the correct usage of the professional terminology. Literacy, content and grammatical task are



assessed on a 5-point system, and the total of these points corresponds to a certain level of the communicative competence formation.

**Table 2**

**Assessment of the communicative competence development<sup>†</sup>**

<b>The total of points for an essay with a grammar task</b>	<b>Development level</b>
15–14 points	High
11–13 points	Average
7–10 points	Below the average
3–6 points	Low
0–3 points	Not developed

However, the communicative competence development implies not only knowledge of the professional terminology and ability to use it correctly, but also possessing of some sociolinguistic aspects, such as the ability to carry out speech activity in various communicative situations, an internal understanding of the situational relevance of the language, as a method of diagnosing and assessing this competence. Thus, we propose to use the case-method as as the method of diagnosis and assessment of this competence. The criteria for evaluating case-tasks of different forms (teamwork, public speaking, written work, organizing a dialogue) are presented in Table 3 below.

**Table 3**

**Criteria and levels of formation of sociolinguistic competence<sup>‡</sup>**

<b>Criteria</b>	<b>Low level</b>	<b>Average level</b>	<b>High level</b>
Dialogue	Knows the norms of dialogue. Asks questions and answers them in compliance with the goal set.	Knows the norms of dialogue. Knows how to express his opinion, sometimes in a critical way. Knows how to ask for the opinion of a partner.	Knows how to express his opinion, learns to be critical towards it. Knows how to admit the faultiness of his opinion and correct it. Knows how to bridge gaps in communication within the framework of dialogue.

<sup>†</sup> Developed by the author based on the pedagogical experiment

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Public speech	Practically does not comply with the norms of public speech and regulations. Works with questions asked to clarify and understand the topic. Avoids using non-verbal communication.	Partially does not comply with the norms of public speech and regulations. Deals with questions asked on the development of the topic. Uses non-verbal means or visuals. Applies logical communication means.	Complies with the rules of public speech and regulations. Works with questions to discredit the position. Prepares visual materials and uses them competently. Applies logical and rhetorical techniques, techniques of feedback with the audience.
Teamwork	Collaborates in joint problem solving. Learns to respect the ideas and opinions of others, tries to negotiate.	Knows how to compare his ideas with the ideas of others, develops and clarifies them. Organizes work by his own a team (group).	Organizes work in a team (group) by his own. Shows tolerance towards other judgments and interests. Knows how to compare his ideas with those of others.
Written communication	Formulates his ideas in written communication with a simple structure.	Formulates his thoughts in written communication of a complex structure. Defines the structure of the written document in accordance with the aim set.	Submits the results of information processing in writing. Creates a written document containing arguments for and/or against the position presented for discussion.

**Conclusion.** Summing up the results of the research, it is possible to make a conclusion that the technique for developing communicative competence of students of an engineering university in the process of studying social and humanitarian disciplines is of invariant nature. It enables to optimize the process of educating future engineers through the efficient use of the didactic potential of social and humanitarian academic subjects of an engineering university and does not require additional funding.

In addition, in the research process it has been revealed, that the following peculiarities are inherent in communicative competence:

1. **Manifestation diversity.** This type of competence is implemented in two aspects: as an integral characteristic of a person, which is formed in the process of mastering and applying the conceptual and terminological apparatus of a particular science and (or) the sphere of human activity, and as a situational characteristic of a person, manifested in the system of working with terms within the boundaries of a certain conceptual and terminological fields.
2. **Integrativeness.** The integrative nature of communicative competence is demonstrated in the fact that it, in one way or another, is present as a component in other competencies. In particular, the adequate use of special terminology by students of a technical university ensures their implementation in professional, communicative, creative, social and other types of activities of a modern person.
3. **High dependence on education.** Communicative competence is developed in two ways - through education at educational institutions and self-education. In the first case, the communicative competence development can perform as a specially set goal that depends/does not depend on the needs and cognitive interest of students. In the second case, the communicative competence development is determined by the motives and cognitive interests of the personality itself. The developed model of communicative competence of a future engineer constitutes a theoretical basis for the subsequent development of a methodology for studying it among the faculty and academic instructors in the didactics focus area.

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