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# PSYCHOLOGICAL-PEDAGOGICAL AND LINGUODIDACTIC PROBLEMS OF LANGUAGE EDUCATION UNDER CONDITIONS OF SOCIETY DIGITAL TRANSFORMATION

Monograph

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The proposed theoretical, methodological and applied issues of psychological, pedagogical and linguodidactic issues of language education in the context of society digital transformation are of theoretical and practical interest for scientists, practicing teachers, postgraduates and students.  
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## ABSTRACT

The current stage of development of the educational industry in the world is marked by the intensive introduction of digital technologies, which significantly transforms approaches to the organization of the educational process. With the rapid digitalization of society, the development of technologies, especially in the field of information and communication activities, the active formation of the information space and the growing importance of specialized knowledge, there is a need to revise the content and methodological principles of professional and language training of students. The collective monograph is devoted to solving the psychological, pedagogical and linguodidactic problems of language education under conditions of society digital transformation. These issues are relevant in connection with the spread of requirements for the professional competence of modern specialists, the need to improve the quality and efficiency of their training in higher education institutions.

The monograph examines the psychological-pedagogical factors of achieving effective communication between a teacher and a student in the digital space of distance education. The development of cultural intelligence of future technical specialists in the process of learning a foreign language is considered. The formation of professional terminological competence of students of Ukrainian higher education institutions in the conditions of digital transformation of higher education is substantiated. The development of communicative soft skills in the digital educational environment is analyzed. A model of the relationship between social intelligence, perception and self-presentation of the individual in digital communication is presented. The process of forming research competence of students in the innovative educational environment of higher education institutions is studied. The integration of AI technologies into the process of teaching a foreign language as a way to form the intercultural competence of higher education applicants is considered. Methodological developments for the implementation of generative AI into the process of teaching a second language in the higher education system are proposed. The essence, role and features of the use of AI in teaching the Ukrainian language are studied from the point of view of modeling and applying the evaluative potential of adjectives. The author's methodology for forming a culture of business communication of future bachelors of banking using training technologies in a digital educational environment is presented. The architectonics of metacognitive modeling of text messages in a foreign language by students is considered.

The proposed theoretical, methodological and applied issues of psychological, pedagogical and linguodidactic issues of language education in the context of society digital transformation are of theoretical and practical interest for scientists, practicing teachers, postgraduates and students.

### KEYWORDS

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Digital educational environment, AI technologies, foreign language, educational communication, digital communication, foreign language communicative competence, professional terminological competence, research competence, intercultural competence, cultural intelligence, social intelligence, social perception, self-presentation, culture of business communication, communicative discourse.

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## CIRCLE OF READERS AND SCOPE OF APPLICATION

The monograph is of practical interest to specialists in the field of psychology, pedagogy, philology, teachers of higher education institutions, doctoral students, postgraduate students, students of psychological, pedagogical and philological specialties from the perspective of introducing innovative methods into the process of professional and language education of domestic and foreign students in the context of society digital transformation, and testing scientific research methods.

The scientific value of the materials presented in the monograph is the justification of the system for developing the cultural intelligence of future technical specialists in the process of learning a foreign language, the analysis of the process of forming the professional terminological competence of students of Ukrainian higher education institutions in the conditions of digital transformation of the education and intercultural competence of higher education applicants by integrating AI technologies into the process of teaching a foreign language, the study of the dual impact of generative AI on learning a second language in the higher education system and the architectonics of metacognitive modeling by students of text messages in a foreign language, the presentation of the author's professionally oriented training "Professional Culture of a Banking Specialist", the consideration of ways to develop communicative soft skills in the conditions of education digital transformation. Also relevant are scientific developments in the field of philology, such as research on AI in teaching the Ukrainian language: modeling and application of the evaluative potential of adjectives, psychology, for example, research on the relationship between social intelligence, perception and self-presentation of the individual in digital communication, psychological-pedagogical explorations, in particular, consideration of the formation of the scientific and research competence of students in the innovative educational environment of higher education and the development of psychological-pedagogical factors for achieving effective communication between a teacher and a student in the digital space of distance education.

Due to the universal approach to scientific research on problematic issues of higher education and the relevance of the issues considered for many countries of the world, the results obtained can be methodologically useful and practically applied both in Ukraine and in other countries of the world.

## INTRODUCTION

Nowadays, higher professional education feels the need to transition to a more flexible system of student training, to update the ways of organizing the educational process, which would take into account the needs of the individual in the development of creativity, creative potential, which will allow forming a specialist who will be more susceptible to changes in the field of work, able to quickly find solutions and act in situations of uncertainty and contradiction, etc.

The digital transformation of society has reformatted the way of organizing the educational environment much more deeply than the previous stages of modernization. If earlier innovations concerned mainly the content of education, today the very logic of interaction between participants in the educational process is changing. Higher education institutions are increasingly working in the format of distance or blended learning, using multimedia resources, interactive platforms and mobile services. As a result, students find themselves in an environment where communication becomes more fragmented, flexible, and its speed and tools determine the quality of educational activities.

The rapid introduction of artificial intelligence (AI) into the field of higher education has marked a new era in methodology. Methodological approaches to the formation of professional competence in a digital educational environment prove the need to use AI tools, such as interactive platforms, multimedia resources and adaptive distance learning systems, which allows taking into account the individual characteristics of students and ensures a high level of assimilation of educational material. This is especially important in the field of teaching language disciplines, since the competence of the applicant depends on the availability of access to authentic materials, the professional resource of the teacher and the ability to receive adequate feedback. This range of requirements can be implemented under the conditions of the transformation of education at the level of digitalization, when distance and blended learning takes place in a single digital environment.

The creation of a digital educational environment in higher education institutions is becoming relevant today, under the influence of which the process of socialization, general cultural and professional development of students, the development of the professional culture of the future specialist will take place.

The need to achieve positive results in these areas requires constant research, scientific discussions, and the development of scientifically sound strategies in the study of psychological, pedagogical and linguodidactic problems of language education in the context of society digital transformation.

# PSYCHOLOGICAL–PEDAGOGICAL FACTORS OF ACHIEVING EFFECTIVE COMMUNICATION BETWEEN TEACHER AND STUDENT IN THE DIGITAL SPACE OF DISTANCE EDUCATION

Nadiia Morhunova, Olena Bilyk, Natalia Ushakova, Oleksandr Shumskyi, Zhanna Nurzhanova

## ABSTRACT

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Research into the scientific problem of educational communication between a teacher and students in distance education is today an important factor in increasing the effectiveness of learning. The authors analyze scientific approaches to such fundamental concepts as "communion", "communication", "interaction", consider the main characteristics of the distance education environment and the educational opportunities of online communication. The main issue of the study is the psychological-pedagogical features of communication between participants in the educational process in distance learning. The authors also focus on the features of the linguistic level of communication between a teacher and students in the distance education space, consider examples of a specific discourse of distance learning, which is a specialized clichéd type of communication between a teacher and a student.

## KEYWORDS

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Educational communication, communication and interaction in online learning, participants in the educational process, distance educational technologies, the formation of students' communicative competence.

### 1.1 CONCEPTUAL APPROACHES TO UNDERSTANDING THE CONCEPT OF "COMMUNICATION" AND ITS LEVELS IN THE EDUCATIONAL PROCESS

A systemic vision of the psychological-pedagogical factors of the effective process of educational interaction between a teacher and students under the conditions of online learning requires a clear definition of the key concepts of the problem field of our study, first of all – the concept of communication and its role in the educational process.

Communication is one of the most important and most general characteristics of any type of activity, a semantic aspect of social interaction. The most common understanding of the concept of "communication" is a form of connection, one of the manifestations of information exchange between subjects in the process of their direct communion using technical means. In communication theory, this category is most often used in the meaning of communion, exchange of information between people (groups); a specific form of human interaction in the process of life using language and other forms of connection (N. Luman, J. Fisk, I. Gorelov, T. Drydze, T. Yezhyzhanskaya, Ya. Zasursky, V. Kashkin, O. Kurban, A. Sokolov, F. Sharkov, etc.). So, as we can see, scientists associate the concept of "communication" with the concepts of "communion" and "interaction".

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Communion is the interpersonal interaction of people, for example, when exchanging information of a cognitive and affective-evaluative nature in the process of intra-group interpersonal and mass communication. One of its main purposes is the implementation of the contact function and the function of mutual influence, that is, the social function of ensuring the reproduction of social relations. A number of researchers identify the concepts of "communion" and "communication" (L. Vygotsky, V. Kurbatov, O. Leontiev, T. Parsons, Yu. Prylyuk, K. Cherry, Yu. Habermas, etc.), and another approach is associated with their separation (V. Bekh, S. Denisyuk, M. Kagan, V. Lizanchuk, S. Maksymenko, S. Nikolayenko, V. Rizun, etc.). From this point of view, if communion has a practical, material and spiritual, informational and also practical-spiritual nature, then communication is a purely informational process – the transmission of certain messages. Also, communion is a subject-subject interaction, there is no sender and recipient of messages, but there are interlocutors, co-participants in a common cause, then communication is mostly an informational connection of a subject with one or another object – a person, an animal, a machine.

The third point of view on the question of the correlation of the categories of "communication" and "communion" is based on the concept of information exchange (D. Bell, N. Ishchuk, N. Zakharchuk, T. Lavrukina, M. McLuhan, M. Prysach, O. Toffler, etc.). Communion does not exhaust all information processes in society, covering all social subsystems. Moreover, verbal messages constitute only a small part of information exchange in society, in other cases, information exchange is carried out in non-verbal forms, and its carriers are not only non-verbal signals (facial expressions, gestures, intonation, etc.), but also things, objects, material carriers of culture that allow information to be transmitted in space and time. That is why the concept of "communion" denotes only those processes of information exchange that are specifically human activities aimed at establishing and maintaining interaction between people, and are carried out, primarily, with the help of language.

We can denote all information processes in society by the term "social communication". From this point of view, the most general concept is "communication" (information exchange), less broad – "social communication" (information exchange in society) and the narrowest, denoting a type of "social communication", which is carried out at the verbal level of information exchange in society, – "communion".

As O. Abakumova emphasizes, today the concept of "communion" primarily means interpersonal interaction, and social communication is assigned an additional meaning – the implementation of information exchange between subjects in different spheres of society [1]. On this basis, the author presents communion as a socially conditioned process of exchanging thoughts and feelings in various spheres of cognitive, labor and creative activity, implemented mainly with the help of verbal means of communication (non-verbal means play an additional role). Thus, unlike communion, the broader term "social communication" reveals the socially conditioned process of transmitting and receiving information both in interpersonal and in group or mass interaction through various channels using various communicative means. The author understands social communication as the process of interaction, the parties to which are an individual, organization or group, and the ways of communion of people that allow creating, transmitting and receiving various information [1]. In the process of communication, messages are exchanged, information is transferred from one person to another.

The concept of "interaction" is interpreted in dictionaries as "a special type of connection, a relationship that assumes mutual influences and changes between the parties" [2] and is most often used in

psychological-pedagogical research to characterize real interpersonal contacts of people in the process of joint work and to describe the mutual influences exerted by people on each other in the course of joint work. A number of scientists emphasize the connection between interaction and communion, sometimes defining interaction as a form of communion of subjects or even combining these concepts (I. Bekh, R. Bonzak, I. Bulakh, O. Volkova, L. Dolynska, L. Zhuravlyova, I. Zyazyun, S. Maksymenko, S. Farenik, G. Hibsh).

To ensure the quality of education, it is imperative to take into account the interaction of a teacher and a student, since it is precisely that, which is of decisive importance for all other forms of interaction in the educational process. If the teacher supports the student, shows sincere interest in the results of his/her learning, provides support at each stage of the educational process, then the student is more likely to want to communicate with the teacher and, as a result, will be more receptive to all other aspects of the educational process [3].

Scientists distinguish several styles of pedagogical interaction: communion based on a high professional attitude of the teacher, communication based on benevolence, communion-distance, communion-intimidation, communion-flirtation, etc. [4]. In pedagogical practice, one or another combination of these styles is usually found in one proportion or another, with a significant predominance of one of them [5]. Pedagogical interaction can be considered optimal and constructive if the communion of interacting subjects occurs on equal terms, which implies the exchange of information, and not just its transmission, and joint activity is built taking into account the individual abilities of the subjects, and mutual understanding is achieved with mutual emotional acceptance.

Knowledge of the strengths and weaknesses of the main styles of teacher-student relationships helps to build constructive communion, avoiding those teaching styles that do not contribute to the establishment of communication between them. For example, with an autocratic approach, the teacher only sets his/her requirements and monitors their strict implementation; with an authoritarian teaching style, students can still participate in discussing issues related to the educational process, but ultimately the teacher reserves all the main decisions for him/herself; with a democratic style, the teacher takes into account the opinions of students, seeks to understand them, convinces, rather than orders, communicates through dialogue on equal terms. It is also possible to distinguish an inconsistent communion style, when the teacher uses one of these styles depending on the external situation and his/her own emotional state, and an ignoring style, which is characterized by the fact that the teacher seeks to interfere as little as possible in the life of students, does not show interest in their opinions and does not take them into account when making decisions, performing only formally the duties of transmitting educational and administrative information. This style of relationship is harmful to the development of students, since they do not receive support and guidance from the teacher, which can lead to insufficient motivation and lack of development, which are necessary for the formation of skills in a future professional. The ignoring style can also create distrust and a negative attitude of students towards the teacher and the educational process itself. Therefore, it is important for the teacher to use a democratic style of relationship, which promotes the active participation of students, the development of their leadership skills and motivation to learn.

Modern scientists distinguish two main aspects of educational communication, considering, firstly, communication as the transmission of information in time and space from the recipient to the

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communicator (teacher – student) (O. Vysotska, M. Zameliuk, V. Kornienko, Yu. Kosenko, O. Sumets, A. Tereshchuk, V. Tryndyuk, etc.) and, secondly, as communion between the main participants in the educational process (teacher – student; teacher – teacher; teacher – employee of HEI) (D. Dutsyk, I. Kondratyuk, M. Lisina, T. Pavlenko, R. Prima, I. Chaplay, etc.).

There are several types and means of communication, the most common of which is the division into verbal, non-verbal and visual means. Its structuring by levels, at which communication occurs, is relevant today in scientific literature. These levels do not equal a hierarchy, since the means of communication freely interact with each other. Most scientists (F. Batsevich, A. Kyrychok, V. Konetska, T. Kosmeda, M. Pentylyuk, I. Rudenko, L. Stolyarenko, etc.) distinguish semiotic, linguistic, metalinguistic, paralinguistic, synthetic levels of communication as ways of transmitting information. Let us give a more detailed description of the levels of communication.

The semiotic level covers all sign systems, through which information is transmitted. The sign is the main constructive unit of this level. Existing typologies of features of sign (semiotic) systems capable of storing and transmitting information are built on various grounds in accordance with the understanding of the general theory of the sign. A social sign is understood as a symbol that can be realized in an object, word, gesture, action, image. Symbols include any signs, symbols, emblems that convey information about the social status of an individual, his/her belonging to a movement, organization or group.

The linguistic (speech) level of communication concerns the language itself and is created by words and word combinations. In this case, attention is focused on verbal means, including the word, as a communicative unit (word – speech act/utterance – discourse). Only through speech do verbal units fulfill their communicative purpose. At the same time, communication is realized in specific situations in accordance with the norms of speech activity, consisting of motivated actions of communicants (speech acts). Speech act – purposeful speech behavior, carried out in accordance with the rules adopted in this society; a unit of normative sociolinguistic behavior within a certain communicative situation. A speech act is always correlated with the person of the speaker, whose social status is taken into account when transmitting and receiving information. A certain statement regarding a speech act as a process is its verbalized result, the product of speech action.

The metalinguistic (interlingual) level of communication is created by special verbal means (metalanguage – the language of scientific and professional terms, concepts, explanations, definitions, which are the main units of this level). Metalanguage is a "second-order" language, in relation to which natural language is considered as an object, that is, the subject of linguistics. This is the language of scientific and professional terms.

The paralinguistic (near-linguistic) level of communication arose on the basis of the sound nuances of speech (tone, pace, loudness) and is created by non-verbal means of transmitting information, which are usually called paralinguistic means of communication in contrast to linguistic (verbal signs). The main units of this level are gestures, facial expressions, body movements, voice properties, pauses, range of melodic variation, tempo modulations, timbre.

The synthetic level of communication is created by a combination of verbal, non-verbal and artistic means of communication. It is a synthesis of the functioning of verbal and non-verbal means, which together

create a full-fledged communion. The simultaneous use of verbal and non-verbal means is due to the desire to specify information, make it more expressive and meaningful, in order to be able to influence the interlocutor. Although in such functioning non-verbal means are on the secondary plane of communication, they exert a more effective influence.

Educational communication is a purposeful process of information exchange between participants in the educational process, which includes the transfer of knowledge, skills, organization of educational interaction, etc. The basis of educational communication is the information field, which can be imagined as a set of information, data objects and subjects used to form students' professional competencies [6]. The source of information is the teacher, who, as a professional in a certain field of knowledge, is responsible for the formation of competencies, knowledge and skills in students. The student is the recipient of information, who as a result of communication with the teacher acquires professional competencies.

Communications between the teacher and students are carried out using a two-way communication channel. The communication channel provides the communicator and the recipient with the means to create and perceive a message, i.e. language signs, codes, material carriers of messages, technical devices. The effectiveness of educational communication depends on the presence of restructuring and destructuring. A reconstructor is a part of the information field that helps in setting up communication channels between students and the teacher, and a destructor is a part of the information field that interferes with setting up these channels. The characteristics of the information field are the boundaries of the information space, the intensity of information flows, its scale, complexity, the number of communication channels, the speed of information movement, and the reliability of work. In the face-to-face format of education, the communicator (teacher) and the recipient (student) are inside the information field, communicating with each other face-to-face, which allows you to supplement verbal communication with emotional and sensory components (gestures, facial expressions, posture). The effectiveness of communication is also affected by the appearance of the communicator and the recipient (clothes, shoes, haircut, mobile phone, watch, etc.). The following communication reconstructors are characteristic of the face-to-face format of education: the presence of non-verbal and verbal means of communication; the teacher's regulation of the average number of events depending on the interest of the audience and the amount of data provided to them in a period of time; the system's high ability to cope with erroneous data and errors during the performance of tasks. The destructors of communication in the face-to-face educational format are the limited scale of transmission (information flows are limited by the physical characteristics of the audience) and the teacher's division of subjective and objective information within this scale. Given that the face-to-face format contains physical boundaries of information flows, the teacher can freely control all characteristics of communication.

The transition to distance learning revealed not only the need to improve communication processes in education and create an appropriate communicative environment, but also to increase the digital competencies of all participants in the educational process. In addition, distance interaction has blurred the boundaries between two complementary types of communication – verbal and non-verbal. At the same time, the significant non-verbal part of communicative interaction, which plays an important role at the stage of involving students in the educational process and forms the basis of their motivation, turned out to be complicated.

In the distance learning format, students and the teacher are outside the information field. The communicator and the recipient communicate with each other using virtual communication, which includes oral, documentary and electronic parts. As a rule, students, at best, see the teacher sitting in front of the screen, and the teacher does not see the students, since the speed of the Internet does not always allow the use of two-way video conferencing, and students do not seek to show their faces. And in the worst case, there is no visual contact at all, because the teacher, in response to the students ignoring the visualization, does not turn on the video camera either. The lack of direct visual contact between the communicator and the recipient does not allow the transfer of emotional and sensory components, which can reduce the effectiveness of communication. In this format, an interactive component of learning appears, to which the entire communicative load is transferred.

The following communication restructurers are characteristic of the distance education format: regulation by the teacher of the average number of events depending on the interest of the audience and the volume of data provided to them in a certain period of time; the presence of an electronic channel that allows the use of illustrative (interactive) materials in communication. The destructors of communication in the distance education format can be called the expansion and blurring of the boundaries of the educational information field, the presence of a verbal channel, the absence of restrictions on the scale of data transmission, the loss of control over the division of information into subjective and objective within a limited scale, the low ability of the system to cope with erroneous data when performing tasks, a decrease in the volume of perceived information due to the difficulties of self-organization of students in a home environment, a decrease in control by the teacher over the perception of information by students, the absence of an individual approach to them. For the distance education format, the expediency of presenting educational material is associated only with the verbal channel of communication, therefore the lesson plan is based on the presentation of basic information in an interactive component. Since the format does not contain boundaries in either the territorial component, time, or scale, the teacher faces problems in controlling all characteristics of communication and in establishing the boundaries of the educational field and time of communication (task deadlines, reporting formats, consulting on current issues, etc.).

## **1.2 ANALYSIS OF THE DISTANCE EDUCATION ENVIRONMENT AND EDUCATIONAL OPPORTUNITIES OF ONLINE COMMUNICATION**

Today, the distance education environment under various socio-political conditions has become an everyday and integral part of the educational process in HEIs of Ukraine, but the question of the feasibility and effectiveness of implementing various pedagogical methods and technologies in it remains open and relevant. Now we can confidently state the fact of the existence of a new network generation of students, for whom a mobile phone, computer and the Internet have become natural elements of their educational space.

The concept of a distance education environment is understood by scientists as a set of digital platforms, various tools, resources and methods that enable students to learn without their physical presence, while ensuring flexibility, accessibility of educational information and an individual approach to

students through the use of video conferencing (Microsoft Teams, Zoom), software platforms for managing the educational process (LMS – Learning Management System (Moodle, Google Classroom)), interactive tools (Kahoot, Padlet), digital libraries, e-mail, web forums, chats, etc. This environment covers everything from video lessons and tests to forums and individual communication between a teacher and a student, which is fundamentally different from traditional distance learning.

Within the framework of electronic educational information systems in Ukraine, each HEI operates a digital learning environment consisting of the official university website, an electronic library, a training website, an MCW portal, etc. All educational and qualification and work programs are digitized and duplicated in a modular object-oriented dynamic learning environment (Moodle), which evaluates success both automatically and personally (in the form of attached tasks).

Distance learning is a very convenient and most accessible way of interactive relationship of participants in the educational process for the purpose of transferring and mastering knowledge, skills and methods of cognitive activity. Theoretical, methodological and methodical problems of distance learning are discussed and highlighted in the works of many foreign and domestic scientists (J. Andersen, O. Andreev, S. Vityvska, R. Delling, V. Kukhareno, Ya. Necheporuk, M. Oliver, V. Oliynyk, E. Polat, M. Simonson, O. Tyshchenko, etc.). The distance form of education is positioned by scientists as an individualized process of obtaining education, which occurs mainly through the indirect interaction of participants in the educational process who are distant from each other in a specialized educational environment that functions on the basis of modern psychological, pedagogical and information and communication technologies.

Modern Ukrainian scientists define distance learning as a form of organizing the educational process, in which its active participants (the object and subject of learning) achieve the goal of learning, carrying out educational interaction in principle and mainly extraterritorially (at a distance that does not involve direct educational interaction of participants face to face, other than when the participants are territorially outside the possible direct educational interaction and when their personal presence in certain educational premises of the institution is not mandatory during the learning process)[7].

Therefore, distance education is mainly partially independent learning using technical, information, multimedia means, as well as the Internet, which includes contact with the teacher at the right time by means of distance transmission. Under distance learning conditions, subjects are separated in space and time, and the transmission and perception of information are implemented in a virtual environment. The organization of the educational process is ensured by a special system, a special methodology for developing textbooks and a teaching strategy, and the use of electronic or other communication technologies.

A key component of distance learning is the ability to connect to an educational portal to receive assignments and download answers. The advantages of using distance education technologies include no need for time-consuming travel, the diversity of curricula, the possibility of repetition, the absence of socialization problems, and inclusiveness. This technology is aimed at students, creating comfortable conditions for them to master educational information at any time; the teacher turns into an assistant, a mentor, his/her monologue is transformed into a dialogue between two colleagues, one of whom is more experienced; the process of acquiring knowledge in distance learning is the independent work of students, which plays one of the most important roles in the educational process. The disadvantages of distance

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education include the low quality of the knowledge obtained, the need for the strongest willpower, asociality, equality, and unemotionality.

The terms "distance education" and "distance learning" are closely related to the concepts of "online learning" and "e-learning". The concept of "online learning" complements the concept of "distance learning", specifying the methods of acquiring knowledge and forms of contact with the teacher through the use of synchronous Internet communication technologies. Online education, unlike distance education, involves face-to-face communion in real time, conducting classes in the format of video broadcast or video recording, interactive seminars, network tests and quests, organizing feedback between participants in the educational process. The format of learning that is now mostly used by teachers should be called online learning using distance educational technologies. E-learning also involves the use of information and communication technologies. Unlike online learning, which takes place mostly in real time, according to a schedule, e-learning is asynchronous and is carried out at a time convenient for the student, which allows him/her to learn at an individual pace, but at the same time requires greater self-discipline

In distance education, the quality of the relationship between a teacher and a student is directly related to the effectiveness of student learning. Educational interaction can be considered optimal and constructive under conditions when the communion of the interacting subjects occurs on equal terms, which involves the exchange of information, and not only its transmission, joint activities are carried out taking into account the individual abilities of the subjects, and mutual understanding is achieved with mutual emotional perception [8, 9]. When relationships are harmonious, students feel care and support, which increases their motivation and increases interest in learning. Such positive relationships help create an open and inclusive learning atmosphere, thanks to which students are willing to spend time and energy on acquiring knowledge, which, in turn, contributes to their deep understanding and application in the future. However, if these relationships are strained or distant, students may feel deprived of attention, which will lead to the development of rejection and resistance to learning. In this case, the effect of student learning will significantly decrease. That is why the influence of the teacher-student relationship on the effectiveness of learning in distance education cannot be ignored.

In distance education, the role of teachers has undergone a profound transformation, they have ceased to be limited to the traditional status of a translator of knowledge, and have gradually turned into a guide, facilitator and reliable assistant in the process of student learning. This change in role requires teachers to adapt to the new learning environment and provide a variety of learning resources through the online platform, carefully organize learning activities, and also respond to questions and solve problems in a timely manner to help students develop the ability to learn independently and realize their individual development goals.

### **1.3 PSYCHOLOGICAL-PEDAGOGICAL FEATURES OF COMMUNICATION BETWEEN PARTICIPANTS OF THE EDUCATIONAL PROCESS IN DISTANCE LEARNING**

An integrated approach to solving the main tasks of distance education is a combination of a complex of psychological-pedagogical and information-communication technologies, computer learning, multimedia

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technology and intensive learning methods. For effective communication in the process of distance learning, teachers must take into account the psychological difficulties that arise in students and develop ways to overcome them. The most important psychological problems of distance learning for students are the lack of face-to-face interaction, difficulties with motivation and concentration of attention, which lead to low academic activity, a certain confusion of students due to limited access to resources and support, technical difficulties associated with mobile connection, isolation and lack of communion and interaction of students, etc. [10].

The main educational goal is to form a number of competencies in students: subject (acquiring knowledge, skills, abilities and experience), meta-subject (mastering communicative and cognitive methods of activity), personal (forming a system of value relations towards oneself, learning, etc.). Higher education sets complex tasks for the formation of a highly motivated person who independently builds his/her educational trajectory throughout his/her life. The advantage of modern students is that they easily navigate the world's information flows, but one of the significant shortcomings is that they often turn out to be dependent, unself-critical and disorganized, mostly aimed at finding and copying a ready-made solution to a problem, rather than finding ways to solve it. In the situation of transition to distance learning, all these shortcomings are amplified. The cognitive style of students belonging to generation Z (born after 2003) is changing. They are characterized by dynamic clip thinking and inability to concentrate, inability to read thoughtfully, highlighting the main points. The need for close control and literal explanation "on the fingers" from the teacher lowers the methodological bar of teaching. Students are less and less able to build a live conversation, formulate an opinion, competently paraphrase a text, give "ragged" complex answers, prolong pauses, and remain silent. The other side is the lack of boundaries and frameworks in communion on the Internet model, where you can start communicating with any person, regardless of social status and role, and relations are a priori meant to be friendly. To optimize this method of acquiring knowledge, scientists M. Oliver and K. Tigwell propose to apply a number of technologies and pedagogical approaches in distance learning, based on four educational theories: "constructivism, behaviorism, connectivism and cognitivism, to meet challenges and to optimize students' learning process" [11]. What is important here is the behavioral aspect and consideration of cognitive abilities, as well as the connection with the learning environment, and communication.

One of the main factors of productive learning for most students is the opportunity to socialize. For psychological comfort, a person needs a full-fledged existence and communion in society, not limited by circumstances that force them to communicate with the teacher and classmates only through electronic connection. When studying subjects remotely, students are deprived of live communion, which leads to a number of psychological problems that can negatively affect the success of their studies. The lack of a stimulus, such as a familiar dialogue or polylogue, often negatively affects interest in learning in general. A serious problem during distance learning is the low level of student motivation. A psychological barrier in the process of distance learning can also be created by the increase in the independence of the student, who most of the time is forced to comprehend serious amounts of information not under the patronage of a teacher-mentor, but by reading literature or watching video lessons. This imposes great responsibility on the student, because if a number of disciplinary conditions are not observed, there is a high probability of

academic debt. The student is required to have a high level of self-discipline, self-organization, responsibility and self-control.

Any distance learning implies intensive and purposeful independent work of the student, which must be constantly coordinated with the teacher using mobile connection, various instant messengers, e-mail, as well as video connection. The permanent lack of feedback due to possible delays in the exchange of messages can also provoke anxiety in students. Most often, in the process of distance learning, not all communion between the teacher and students takes place in real time, and a long wait for advice on completing a task or mastering the material can create psychological discomfort. Partial or complete lack of empathy and reflection in the process of correspondence and impersonal electronic communication between the teacher and students is another factor contributing to the emergence of psychological difficulties. Much depends on the personal interpretation of the messages read, while real communion has a more understandable emotional coloring due to the use of verbal and non-verbal means of communication.

A common reason for the lack of interaction, misunderstandings or even conflicts between students and teachers in classes is also the inadequacy of assessing students' knowledge.

Given the peculiarities of distance learning, there is a need to create optimal psychological conditions for remote interaction between students and teachers on a regular basis. The teacher can help students cope with problems associated with the lack of socialization by using interactive methods of distance learning – a business game, an online discussion or seminar, brainstorming and the case method, etc. The clarity of practical classes will also help relieve psychological tension in students and stimulate increased learning activity. Developing a group project will help to awaken empathy during communion via electronic means. This type of educational activity stimulates the development of an emotional connection both between students and with the teacher, whose participation involves intellectual support and resolution of possible conflicts at each stage of work.

Constant contact between classmates and teachers will help to overcome psychological discomfort in conditions of distance learning. For example, creating a chat in a mobile application or a group on a social network will enable continuous communion between students and teachers and will become a prerequisite for ensuring psychologically healthy relationships among all learning participants. This will allow timely resolution of organizational issues that arise during the training process, receive support and provide feedback. A group chat is also good because it allows all its participants to communicate at a convenient time for everyone, especially if several addressees can answer the question at once.

Thus, analyzing the activities of distance learning subjects, we can conclude that common communication problems in the digital environment are difficulties in establishing interpersonal contacts between participants of the learning process in the absence of visual contact; the need to comply with the norms and rules of telecommunication etiquette that operate on the Internet; inability to behave in an online discussion (silence, aggressive behavior, inability to defend one's opinion, speak concisely and confidently, etc.); difficulties associated with expressing one's own thoughts in conditions of prolonged dialogue and limited means of organizing it; personal communion with a teacher by e-mail; inability to self-organize and rationally plan independent work with educational materials, etc. The teacher, in turn, also faces a large number of difficulties, namely: organizing the activities of online students; choosing a style of communion

with individual students; determining their individual characteristics; forming effectively working small study groups; increasing motivation for learning; creating a favorable psychological climate during classes.

Three types of interaction are necessary for effective distance learning: between students, between student and teacher, between student and educational material. Interaction between students and interaction between the teacher and students are social and emotional spheres, and student interaction with educational material belongs to the cognitive sphere. Meaningful and systematic interaction between the teacher and students is of paramount importance from the point of view of motivation in any form of learning. Since motivation is not directly observable or influenced, teachers should monitor students and the learning process, ensuring the effectiveness of learning through interactive motivational strategies [12]. In this context, it is necessary to analyze students' successes and, in accordance with this assessment, select effective and consistent motivational strategies. It is through intrinsic motivation that students demonstrate self-organization skills.

When considering the issue of teacher competence in distance education, one should pay attention to the formation of his/her competencies in the field of using ICT. The teacher must have knowledge about the system of values of the modern information society, be motivated to master distance educational technologies and develop his/her methodological potential in this area, know the basics of working with information flows, methods of their processing, storage and transmission using IT, observe information security when working in the distance educational space, know the features of using modern information and communication technologies, methods of organizing feedback between participants of the educational process, features of conducting intermediate and final control using network testing, etc.

When teaching distance courses, the teacher may encounter psychological-pedagogical problems due to the specifics of the distance education environment. For example, the teacher cannot always successfully create a favorable psychological climate during training and constantly increase students' motivation to acquire knowledge. Let us analyze several ways to eliminate the negative psychological-pedagogical features of student-teacher communication. In order to compensate for the lack of live communication, C. Perz, B. Lang, R. Harrington recommend that teachers more actively involve students in the educational process, ask them to turn on the camera during classes, and use interactive platforms that require students to respond instantly. Researchers also emphasize the importance of constant coordination of interaction between teachers and students by the HEI management in order to identify emerging problems in a timely manner [13].

We consider the use of interactive methods (business games, online discussions, brainstorming, etc.) to be effective in solving problems related to the lack of socialization. In our opinion, it is also advisable to use the project method, since the development of a group project stimulates the development of an emotional connection both between students and with the teacher, who provides students with support at all stages of work. We also believe that in order to ensure a comfortable process of interaction and effective communication with students, it is necessary for teachers to form a clear system for evaluating the results of current and examination work, informing them about how to get help in case of problems with educational activities, and providing timely consultation to students.

Certain difficulties with organizing online communication are encountered in the process of communication between the teacher and students. During online lectures, it is difficult for the teacher to understand

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how much the audience is included in the process of listening and processing information, how much students have time to learn new material. This is due to the lack of full feedback, since it is difficult for most students to ask a clarifying question in a chat, especially "live", with a camera and microphone connected. In turn, a teacher focused on presenting educational material may not track students' questions in the chat and not answer them. In practical online classes, students usually show greater communicative activity. However, here the teacher faces difficulties of a different nature, related to the use of various teaching methods aimed at actively involving all students in productive work. It is important for the teacher to expand his/her pedagogical repertoire through the active use of problem and discussion questions, creative and research tasks, various game techniques, etc.

Unlike direct communion in classroom classes, in online communication it is most difficult to establish emotional contact, which results in a certain alienation of teachers and students. This is due to the limited possibility of emotional influence through the use of non-verbal means of communion. Students who study remotely see only the "talking head", so they more often perceive the teacher as a "function" and understand him/her less well as a person. This, of course, reduces the educational impact of the teacher. The teacher him/herself also does not have the opportunity to perceive non-verbal signals coming from students in order to understand the level of involvement of each in the lesson. This often leads to the impersonality of online communion.

In a situation of such communicative alienation, problems arise with the educational motivation of students. A certain isolation from the educational institution, lack of interpersonal communion with teachers and classmates, difficulties in self-organizing cognitive activity — all this can negatively affect the motivation of students and reduce their satisfaction with learning. In turn, in a situation of impersonality and remoteness of pedagogical interaction, it is difficult for a teacher to use an individual approach to students. The only tool for him/her remains stimulating students' interest in classes through the original presentation of information and the creation of useful, interesting content.

To minimize the difficulties that teachers face when organizing communion with students during online classes and in the process of managing their independent work, it is important to optimize online communication, including regulating its rules, discussing the regulations and ethics of interaction. The "teacher-student" cooperation method is productive, which is based on the humanistic idea of joint activity of participants in the pedagogical process. Cooperation must be taught. The condition for the successful implementation of this method is compliance with some principles that the teacher must adhere to during the lesson. The positive interaction that arises in the process of joint activity allows students to feel both their own success and the success of their comrades. Joint work on completing the task stimulates close communion between students. By selecting the necessary material, discussing methods and ways to solve the educational task, and helping each other, students feel like a team. Each member of the mini-group is responsible not only for their part of the work, but also for the result of the work of the entire team. This approach contributes to understanding the need to listen to the opinions of team members, treat them with respect, and not reject someone else's point of view.

So, the main ways to improve online communion with students include the creation of a system of communication channels, regulation of online communication rules, prompt feedback, information

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richness of learning through multimedia tools, the use of interactive, search, and creative tasks, openness and flexibility of the teacher, his/her ability to navigate in information, select it, and assimilate a variety of educational content).

#### **1.4 FEATURES OF THE LINGUISTIC LEVEL OF COMMUNICATION BETWEEN TEACHERS AND STUDENTS IN THE DISTANCE EDUCATION SPACE**

Educational communication, speech activity through the use of various digital technologies demonstrates some unique features that make it different from standard speech acts. Communion through electronic means of communication contributes to the emergence of a new type of language, called "e-discourse", which creates new forms and functions of language. Speech activity that takes place in a virtual environment (the Internet, social networks, messengers, etc.), combines the features of both oral and written communion and has specific features, for example, the use of emojis, abbreviations, a certain anonymity, a rapid change of communicative roles, thereby forming new language norms. The key characteristics of e-discourse are hybridity, i.e. a combination of elements of oral (informal) and written (text) speech, distance, dynamism of the course of communication, its personification (the possibility of creating a "virtual personality" that can be diametrically different from the real one), specific language (the emergence of new words, abbreviations and other features), etc.

We consider the following classification of linguistic features that can be observed in online communion to be the most accurate: orthographic features (alphabet, capital letters, spelling and punctuation); linguistic (informal vocabulary, abbreviations); grammatical (word order, sentence structure); features of discourse in terms of its coherence; paralinguistic and graphic features (ignoring capital letters and punctuation norms) [14]. The difference between offline and online written discourse is that language in the online context often exists in a non-standard form, when users apply non-standard spelling of words, ignoring the rules of grammar [15]. According to scientists, the correctness of writing the text, the pronunciation of individual phrases, and the construction of correct grammatical constructions fade into the background for a remote form of communication [16]. For participants in such communication, language is only a means of communion, when the communicator does not think about how his/her speech sounds and what he/she writes, makes many mistakes and is not concerned about this. At the same time, the abnormality inherent in this form of communion contributes to the emergence of new stylistic norms, phraseological units, the expansion of the vocabulary with neologisms and occasionalisms, and changes in the stylistic and grammatical standards of the language norm [17].

Language, whether written or oral, plays a significant role in the development of cognitive, social and motivational factors of personality development. According to sociocultural theory, students are not "clean slates", they bring with them to the educational process a set of ideas and beliefs adopted in the sociocultural group, to which they belong, and which is united by some common activity [18].

Analyzing the problems of the formation of modern educational communication, we will pay attention to the fact that its participants usually use non-standard pronunciation and spelling of words, combine

letters and numbers to create new words, use abbreviations (BTW, LOL, ROTFL), as well as graphic symbols. In terms of phonetics, students often use words that are consonant with lexemes that form the meaning of the statement, but do not correspond to traditional communicative practice. Changing language in the online context demonstrates that there are some new unique forms of language that can differ greatly from the standard language of educational activity. This problem is still at an early stage of scientific understanding and requires further development.

The linguistic features of the online context are unique. The distance form of learning creates a new lexical situation that arises against the background of a psychological sense of the conventional nature of the educational process, its virtuality, which lowers the threshold of control of speech activity, eliminates, according to the participants of communication, the need for strict adherence to the norms of academic educational communion, for which adherence to lexical norms is important, communion between teachers and students without the use of jargon, stylistically reduced vocabulary. Observation of the educational process under distance learning conditions shows that these trends characterize mostly the speech activity of students, however, for teachers, new opportunities for simplifying the speech act are often attractive and acceptable.

From the point of view of lexical features, it is possible to identify a number of features of the discourse of distance learning, which characterizes the linguistic situation currently developing in the Ukrainian system of distance learning. Among the most characteristic features of this discourse are the active use of exclamations that express a spontaneous feeling or reaction of the speaker to certain circumstances of the educational process (ooo, wow); affirmative-negative English words (yes, no), which are used as exclamations that serve to express feelings or reactions of students to some facts; the creation of new abbreviations (LOL (Laughing Out Loud), BRB (Be Right Back), OMG (Oh My God), IMHO (In My Humble Opinion), BTW (By The Way), G2G (Got To Go), ASAP (As Soon As Possible), FYI (For Your Information), IDK (I Don't Know)); deliberate simplification of language constructions (chom? (chomu), norm (normal'no), nz (ne znaju), mb (mabut')) in order to give speech activity a new semantic coloring, introduce ironic-democratic stylistics into interrogative language constructions; use of Americanized vocabulary (ok, good, trash, trouble), which is used to briefly and concisely express the speaker's attitude to the situation that arises in the process of distance learning; a large number of lexical units belonging to youth slang (vidosi, zashkvar, info-sotka, etc.), which, as a rule, are used by students in situations of informal communion with teachers. Another common technique that is actively used in e-discourse is the use of graphic means of reaction to what is happening (emoji), which, on the one hand, simplifies speech activity, transferring it to the category of a symbolic graphic system understandable to the participants in communion, and on the other hand, creates an element of carnivalesque in the communicative educational process. We can also mention the use of numbers instead of words (4 (for), 2 (to/too), 8 (wait) – w8, 4ever), phonetic spelling of words (u (you), thx (thanks)), etc.

We can state that distance online communion in the educational process is a separate special form of language, in which the oral and written parts are closely intertwined, creating a kind of tandem, when users, in order to save time, try to shorten their message as much as possible. Thus, today there is and continues to be formed a specific discourse of distance learning, which is a specialized clichéd type of communication

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between a teacher and a student, which is characterized by the active use of exclamations, affirmative-negative particles of the English language, the creation of new abbreviations, a multitude of lexical units, and relative carnivalesqueness.

## 1.5 DISCUSSION OF THE RESULTS OF SECTION 1

Distance learning is a requirement of the time and is now, due to some circumstances, the main form of learning in educational institutions of Ukraine. However, the transition to new forms of educational interaction has highlighted a number of psychological, pedagogical and methodological problems that need to be solved for effective communication in online mode. Conducting a theoretical analysis of the problem and studying the results of the activities of teachers of several HEIs of Ukraine allowed us to conclude that the problems that arise in the conditions of distance education are similar.

The main psychological-pedagogical problem in the digital space of distance education today is the complexity of communion and emotional interaction between the teacher and students, as well as between students themselves. In the process of distance learning, there is a huge deficit of socio-emotional contact, despite the fact that new information technologies provide many opportunities for easy expansion of contact between people. The absence of the usual offline environment of the educational institution, separation from classmates and teachers can cause students to feel lonely and reduce their educational activity. In such cases, the teacher must provide emotional support, maintain a positive atmosphere in the classroom and encourage students to work together.

The conducted research showed that one of the main factors of the effectiveness of the educational process, success in studying an academic discipline is the teacher's ability to organize pedagogical communication with students, to achieve mutual understanding, without which the effectiveness of learning is impossible. The surveys we conducted and the students' feedback confirm that their attitude towards the discipline largely depends on the attitude towards the teacher. The lack of mutual understanding, the inability to organize effective communication can lead to problems in mastering the academic discipline, despite professional knowledge and effective teaching methods. Surveys of teachers also revealed the need to rethink many concepts and phenomena of the distance educational space. Not all teachers are yet ready to learn about the psychological characteristics of each student, to build a trajectory of the lesson, based on the personal characteristics of an individual student. Many teachers consider the main thing in the teaching process only their professional knowledge and its transfer to students, supporting their position on the subjective-objective nature of the educational process.

The educational process in terms of distance learning requires flexibility and a creative approach from the teacher. It is important not only to master new technologies and use various resources, but also to be able to adapt traditional methods to new conditions. An important role in this process is played by an individual approach to each student, the creation of a favorable and supportive learning environment, as well as the development of independence and responsibility in students. Only when these factors are combined can successful learning outcomes be achieved in the conditions of modern educational realities.

In terms of distance education, the interaction between a teacher and a student is the main component of educational activity, which is not only an important bridge for the exchange of knowledge and emotions, but also has a significant impact on the student's motivation and the results of all his/her learning. Instructional communication encompasses the transfer of knowledge and feedback, as well as the shaping and management of students' emotions, attitudes, and values. Positively building these interactive relationships can greatly stimulate students' enthusiasm for learning and further enhance their ability for independent learning and critical thinking.

Therefore, to solve the above problems and achieve effective communication between participants in the educational process in distance learning, in our opinion, it is necessary to apply a comprehensive approach that combines the use of innovative pedagogical methods to involve students in the educational process, coordination of "student-teacher" communication by the HEI management expansion of communication channels between students and teachers and attention from teachers to psychological support for students, ensuring interaction between teachers and students based on mutual respect and tolerance, training teachers to work in a distance format, preliminary planning of lesson navigation by the teacher using current information and communication technologies, etc.

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## DEVELOPMENT OF CULTURAL INTELLIGENCE OF FUTURE TECHNICAL SPECIALISTS IN THE PROCESS OF LEARNING A FOREIGN LANGUAGE

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### ABSTRACT

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In today's globalized world, more and more people work remotely using digital technologies, often in multinational teams. There is also an increase in cross-border migration of foreign students studying at universities outside their country. These trends emphasize the importance of possessing the so-called cultural intelligence as a predictor of effective online and offline interaction in multicultural groups. The four-factor model of cultural intelligence, the formation of which is the task of modern universities, includes metacognitive, cognitive, motivational and behavioral components. In the conditions of a technical institution of higher education, the development of these components should be integrated into the process of learning foreign languages through the close relationship between languages and cultures, and carried out by both traditional and digital methods, ensuring the multimodality of modern education. Among digital methods, the method of audiovisual translation stands out for its potential in teaching languages and cultures, combining acoustic and visual channels, which, together with verbal and non-verbal aspects of communication, significantly affect the assimilation of linguistic and extralinguistic material.

### KEYWORDS

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Cultural intelligence, university students, foreign language, audiovisual translation.

### 2.1 THE RELEVANCE OF THE INTERCULTURAL SKILLS FORMATION OF A MODERN SPECIALIST

A distinctive feature of the modern global world is the intensification of intercultural relations. From a socio-economic point of view, globalization is the growing economic interdependence of different countries, due to the increase in the volume of cross-border transactions with goods, services, international flows of capital and technologies. Internationalization processes are gaining momentum as international value chains become increasingly interconnected due to the increasing influence of multinational corporations [1].

Globalization is gradually changing the structure of the workforce, stimulating the growth of worker mobility, as it allows them to cross borders in search of better employment opportunities, which intensifies competition in the global labor market and transforms the sphere of employment.

According to experts, by the mid-2020s, 37% of the workforce in Europe was working remotely, and at the peak of the COVID-19 period, more than 500 million people were working remotely worldwide, which is approximately 17% of the world's population [2].

In today's world, where 15% of the population is made up of migrants [3], self-employment (freelancing), reinforced by the phenomenon of nomads ("digital itinerants", i.e. people who work remotely using digital technologies and combine professional activities with a mobile lifestyle, often changing countries and places of residence) [4], is developing rapidly and is becoming one of the main sources of income for many professionals.

There are about 1.1 billion freelancers in the world; in the US alone, their number is growing three times faster than the total workforce. At the same time, 25% of freelancers work remotely in another country or city [5].

This category of workers is also constantly expanding due to the so-called platform workers (or gig workers), who are considered independent contractors and receive payment for performing one-off tasks, such as design, writing or programming, while this type of employment through digital platforms can bring together people from different countries to carry out specific projects.

In addition, in the 21<sup>st</sup> century, there has been an increase in cross-border migration of foreign students, who study in universities outside their country and cross national borders for educational purposes [6].

All these trends reinforce the importance of possessing the so-called cultural intelligence (or cultural quotient – CQ) as the basis for effective online and offline communication in multicultural groups.

Virtual teams, consisting of members from all over the world and representing different cultures, attach particular importance to cultural intelligence, considering it as a key factor in the effectiveness of multinational teams [7], which have to adapt to innovative types of interaction.

Wilson et al. [8] believe that mastering a foreign language is the first step towards entering a new cultural environment and mastering the skills of functioning in an unfamiliar cultural environment. Research shows that, for example, language proficiency by expatriates facilitates their adaptation to a new culture, increases their motivation to search for both information necessary for survival and resources for emotional support, partly due to the ability to communicate their needs as a result of knowing the language [9].

Higher education institutions play a key role in training specialists with intercultural communication skills. Many universities around the world emphasize the development of multiculturalism among students, using approaches, such as organizing international courses, promoting cross-border mobility, attracting teachers with international experience, etc. [10]. In higher education, there is a shift towards prioritizing values over knowledge, attitudes over skills. However, there is an opinion that this shift does not have an appropriate epistemological basis and a developed training system [11].

Future technical specialists must be ready to keep up with the times, while they need to have not only competencies in their field of specialization, but also information about the latest achievements in their field, and continuously update their knowledge and skills in order to remain in demand in the modern labor market. This is difficult to achieve without knowledge of English, which is of great importance for getting acquainted with the latest achievements in the relevant field, publishing the results of their own research and developing a professional career. Moreover, it is desirable for specialists to have foreign language communication skills not only in the field of their professional activity; they should be able to establish contacts in everyday situations while outside their country: communicate in a store, restaurant, hotel, bank, on the street, etc. It is no less important that these are people with a broad horizon, able to express their opinion on

many aspects of socio-cultural life: politics, history, economics, art, etc. After all, future graduates should have developed intercultural communication skills, since they may have to solve professional problems with foreign partners – representatives of other cultures.

And if there are enough resources available for teaching everyday and professional communication in foreign languages, then the issue of preparing for intercultural communication remains in the field of view of educators of all countries and requires the search for new ideas and approaches. Research shows that intercultural learning in foreign language classes lacks systematic planning, is often fragmented and biased [12], and teachers do not always have a clear idea of what to teach and how to develop the intercultural competence of their students.

## 2.2 THE ESSENCE AND MAIN COMPONENTS OF CULTURAL INTELLIGENCE

The definition of CQ as the ability to recognize the peculiarities of cultures, establish connections and work effectively in culturally diverse contexts and situations was first presented in 2003 by Ang and Early. According to researchers, developed CQ instills in an individual the confidence necessary for successful work in a wide range of multicultural conditions, helps in overcoming intercultural barriers and increases the efficiency of work in multinational teams [13].

The authors of the CQ concept proposed a four-factor model of cultural intelligence, which includes metacognitive, cognitive, motivational and behavioral components.

The metacognitive component of CQ reflects a person's ability to build strategies for acquiring cultural knowledge. The following skills were highlighted in its structure: planning as preparation for intercultural interaction, formulation of long-term and short-term goals of such interaction; understanding the peculiarities of one's own behavior and the behavior of the opponent, mediated by belonging to a certain culture; understanding the nature of the mental processes of representatives of another culture; understanding the specificity of the intercultural communication situation; comparing expectations from intercultural interaction and its real results; appropriate adjustment of ideas about other cultures based on the acquired experience. Thus, an individual with a high level of the metacognitive component of CQ predicts the development of a potential situation of intercultural interaction, plans the course of the meeting in advance, predicts its results, and adjusts the model of his/her behavior based on the acquired experience.

The cognitive component of CQ takes into account general and contextual knowledge about culture. General knowledge refers to knowledge of universal elements of the cultural environment: economics, law, politics, religion, moral values, language, etc. Contextual knowledge is knowledge that is applied in a certain situation, which helps to better understand the meaning of what is happening, interpret information and effectively act in accordance with it. For example, in the field of business communication, contextual knowledge may contain data on the features of negotiations and conclusion of agreements, the structure and procedure for managing employees and processes, etc. An individual with a high level of the cognitive component of CQ understands the differences and similarities of cultures using general knowledge and, on this basis, organizes contextual knowledge for effective interaction within a specific field and communication situation.

The motivational component of CQ reflects the desire and intention of the individual to direct attention and energy to intercultural interaction. The main parts of the motivational component of CQ are intrinsic and extrinsic motivation. Intrinsic motivation is defined as a personal interest in intercultural interaction, based on the pleasure of getting to know new cultures, communicating and working together with their representatives. Extrinsic motivation manifests itself in the form of interest in possible personal benefits associated with gaining intercultural experience.

The behavioral component of CQ is considered as the ability of an individual to perform adequate verbal acts and non-verbal actions during communication with representatives of other cultures. The key indicators of the behavioral component of CQ are the flexibility and versatility of verbal and non-verbal behavior. Having developed verbal skills, a person can freely communicate and control the situation, perform speech acts in accordance with cultural standards. Such acts include requests, invitations, apologies, thanks, disagreement, refusals, etc. Verbal behavior is complemented by paraverbal behavior, which is manifested in the ability to vary the pace, volume, emotionality and tone of speech, to use pauses and silence in accordance with the norms accepted in a particular culture. Nonverbal behavior involves communicative interaction and transmission of information in the form of body language, i.e., gestures, facial expressions, posture, as well as maintaining interpersonal distance, establishing eye contact, maintaining an appearance appropriate to the situation.

All these manifestations of nonverbal behavior can contribute to successful communication with representatives of other cultures or, conversely, hinder it, since the correct interpretation of nonverbal signals is an essential condition for effective communication.

The Ang and Early model was later supplemented by Livermore [14] with the following four sub-dimensions that enrich the understanding of the cultural intelligence structure: CQ Drive, CQ Knowledge, CQ Strategy and CQ Action. CQ Drive is represented by the willingness to work with people from different cultures and backgrounds, while CQ Knowledge is the degree of understanding of cultural differences and similarities. CQ Strategy is the ability to mentally adapt to new cultures. Finally, CQ Action is related to the flexibility to adapt to different cultural norms and habits.

The results of empirical studies show that developed CQ is positively correlated with labor productivity in multicultural teams and acts as a predictor of the success of cultural adaptation. Data collection and analysis prove that specialists with a high level of metacognitive and behavioral components of CQ, involved in intercultural activities, are assessed by their managers as more effective and those who meet social expectations, since they demonstrate a conscious readiness to build strategies in intercultural relations (metacognitive component of CQ) and generally perform better in understanding and accepting culturally conditioned expectations of their social role [15].

The main centers for studying cultural intelligence, its assessment and development directions within the framework of various training programs are the Cultural Intelligence Center (<https://culturalq.com/>) in the USA, and the Center for Leadership and Cultural Intelligence in Singapore (<https://www.ntu.edu.sg/clci>), whose tasks are to expand international cooperation, strengthen trust and overcome differences between team members, stabilize the work team and prevent professional burnout, develop and improve adaptation skills to any place and any team.

One of the important characteristics of CQ is that it can be formed and developed [11–13], therefore, the task of universities is to develop training programs that would ensure the development of cultural intelligence of future graduates and, accordingly, their preparation for intercultural communication.

### 2.3 APPROACHES TO THE CULTURAL INTELLIGENCE FORMATION

In many pedagogical systems, preparation for intercultural communication is carried out in parallel with the study of a foreign language due to their direct interdependence, since language is the main tool of communication, and intercultural communication is a process of interaction between representatives of different cultures, which is impossible without knowledge of languages, as well as cultural norms and rules of etiquette.

Back in 1997, the famous researcher of intercultural communication M. Byram combined two concepts – intercultural competence and communicative learning of a foreign language – in his "knowledge model", which became the main text for the formation of intercultural communicative competence (ICC) over the next two decades. Risager [17] emphasizes that, unfortunately, in the 25 years that have passed since the presentation of the model, the relevance of the fight against racism, poverty, sexism, wars, diseases and climate change has only increased, which requires ever closer cross-border and intercultural cooperation between nations.

M. Byram identifies five groups of ICC skills that contribute to the development of students' cultural intelligence, namely: the formation of attitudes, the acquisition of knowledge, interpretation and correlation, the realization of discoveries and interaction, as well as critical awareness of culture. Later, these groups of skills were refined and specified by the relevant structures of the European Union dealing with issues of pluralism and preparation for intercultural communication [18], and now have approximately the following form:

1. *Attitudes* (according to Byram *savoir être*) are related to the value orientations of the individual, expressed in the manifestation of curiosity and openness, readiness to overcome distrust of other cultures; the ability to demonstrate their knowledge of various linguistic and cultural aspects. For example, in the aspect of intercultural awareness, individuals may demonstrate such attitudes as a sensitive attitude to the existence of other languages/cultures/ people, a positive perception of linguistic/cultural/human diversity, etc.

2. *Knowledge* (according to Byram *savoirs*) refers to knowledge of the characteristics of social groups, the products of their activities and the practices they carry out both in their own country and in partner countries, awareness of the processes of social and individual interaction; possession of information about specific linguistic and cultural phenomena. To form intercultural competence, students should be taught: understanding cultures, similarities and differences between them, awareness of their diversity, awareness of the role of culture in intercultural relations and communication.

3. *Interpretation and correlation skills* (according to Byram *savoir comprendre*) mean the ability to interpret a text or event related to another culture, explain them and correlate them with similar phenomena of one's own culture; mediate content between cultural points of view.

4. *The ability to discover and interact* (according to Byram *savoir apprendre/faire*) is correlated with the ability to obtain new knowledge about another culture, operate with this knowledge, manage behavior in the real practice of intercultural communication; observe/analyze language elements/cultural phenomena, interact in situations of contact between languages/cultures, compare the features of different languages or cultures.

5. *Critical awareness of culture/political education* (according to Byram *savoir s'engager*) reveals the ability to critically and accurately evaluate the perspectives, processes and products of one's own and other cultures, to consider and analyze cultural practices through an ethical and evaluative prism.

In the methodology of teaching foreign languages, the Byram concept involves going beyond teaching language accuracy, emphasizing instead the understanding of the cultural diversity of the world.

Another leading researcher of intercultural communication issues, D. Deardorff [19], offers her theoretical model of the components of intercultural communication, some elements of which can complement the four-factor model of CQ.

The components of this model are also knowledge (corresponding to the cognitive component of CQ), attitudes (metacognitive), skills (behavioral) and expected internal-external results (motivational in combination with behavioral). Attitudes in intercultural communication imply a sense of respect for representatives of other cultures, curiosity about the cultural diversity of the world, openness, non-judgment or stereotypes, tolerance. Attitudes can change for the better depending on how well the individual is aware of other cultures (values and norms), language (grammar and vocabulary) and context, including history, literature, cultural artifacts, political, economic, religious systems in other cultures. Ultimately, skills are acquired through participation in intercultural situations, careful observation of the process of intercultural interaction, critical self-reflection, acceptance of other people's perspectives, verbal and non-verbal communication.

A clear understanding of the content of the CQ components helps to build practical models of their formation.

Today, one can everywhere observe the use of an eclectic method in teaching languages and cultures, which combines different approaches and techniques depending on the needs of students. A creative teacher can choose and adapt elements of different methods (grammatical-translational, audio-linguistic, direct, immersion, communicative, suggestopedic, etc.) to the goals of the lesson, creating a single logical learning system. However, the formation of these skills in the aspect of CQ is impossible to imagine today without the use of information and computer technologies.

According to researchers, there is a transition from the dominance of writing to the dominance of the image in modern education and, as a result, from the dominance of the book to the dominance of the screen as a means of communication. The emergence of new, diverse and multidimensional channels of communication, the perception of information through vivid images and sounds inherent in multimedia culture, has led to the expansion and rethinking of the competencies that make up the concept of literacy, which now includes the ability to find and critically evaluate digital, electronic and visual means of expression [20], create and use digital content, communicate safely online and protect your personal data.

Modern information technologies provide new opportunities for learning foreign languages compared to the times when mechanical memorization from a paper textbook was the main means of foreign language learning. The modern educational environment is becoming increasingly multimodal, as it uses text,

gesture, visual and audiovisual elements to convey meaning. It is now hardly possible to maintain students' motivation to obtain education without using multimodal teaching aids, so teachers and, in particular, foreign language teachers have to adapt to these changes, since multimodal methods, reflecting the multi-layeredness and diversity of real communication, can make language learning more attractive for modern so-called "digital natives". Therefore, multimodal learning, combining visual, auditory and kinesthetic sensory modalities, has recently attracted increasing attention from theorists and practitioners as a means of improving the quality of teaching and learning a foreign language.

Multimodality is considered as two interrelated concepts: perceptual mode and modality. Perceptual mode is defined as a socially constructed and culturally given resource for creating meaning, such as images, text and its design, music, gestures, language, moving images, and soundtrack [21]; while modality is the integration of two or more semiotic resources (including language) in the transmission of meaning [22].

Multimodal presentation of information, that is, inputting it in different ways – written, auditory, and visual, is constantly encountered in everyday life. For example, a video sequence with text, which can often be seen on a television screen, on websites, and in social networks, can be considered as audiovisual input. Studies show that audiovisual input expands opportunities for vocabulary acquisition, affects the effectiveness of grammar learning, forms phonetic competence, and improves listening skills [23].

The multimodal approach as a complementarity of different modes of perception fully reflects the reality of the modern communication environment, in which meanings are created both by language and by images, movements, gestures, sounds, etc. In the digital age, when there are many media channels of influence on the degree of understanding and assimilation of material by students, this approach is one of the most promising, since it offers a wide range of semiotic resources, the use of which can potentially improve learning outcomes.

Today, there is a huge variety of fragmentary Internet resources related to various aspects of the cultures of many peoples, and which are practically impossible for students to understand on their own. Therefore, so far, traditional textbooks are the source, in which cultural information can be structured and presented in a systematized, methodically processed form.

Textbooks are often considered the main tool for foreign language training in many language educational environments, and from the point of view of multiculturalism, they can become a rich source of cultural knowledge and information. Textbooks can also convey cultural information through images, texts, audio and video materials, dialogues, lexical items, and other means [24].

Researchers who analyzed the intercultural aspect in the content of a significant number of English as a foreign language textbooks concluded that:

- a) textbooks should include as much information as possible about different cultures and the students' native culture, rather than focusing only on the culture of the target language;
- b) there is a shortage of textbooks that explore language in a cultural aspect;
- c) there is a lack of authentic problem-solving tasks for the development of intercultural competence;
- d) textbooks do not provide sufficient opportunities for the development of critical cultural perception, since they consider cultures in isolation and position students as simple spectators and passive consumers of factual information;

e) the cultural content of textbooks available today cannot in itself contribute to a deep critical understanding of otherness without the help of a teacher [25].

This list of problematic aspects of the analyzed textbooks can be added by the fact that the authors of a modern textbook or educational complex should take into account the multimodality of modern education and develop educational materials with the addition of its elements. It is desirable to rethink the essence of modern communication and teach students not only to read multimodal texts (viewing), but also to be able to independently generate and transmit multimodal content (representing). This new type of literacy is extremely important for the current generation, as it corresponds to their lifestyle, types of activities and features of interaction with others.

A significant factor influencing the quality of preparation for intercultural communication in today's open-border society is cultural immersion, which means the quality and frequency of interaction between people with culturally diverse experiences, the establishment of friendly relations between representatives of different countries, participation in intercultural events, exchange programs and study abroad, and consumption of global media.

Exposure to diverse cultural practices stimulates reflection on one's own cultural attitudes and deepens understanding of cultural diversity, which is the basis of multicultural literacy. Cultural intelligence is widely associated with a person's propensity to acquire intercultural experience and seek out diverse cultural contacts. People with high levels of CQ are more likely to seek opportunities for intercultural communication, for example, by joining multicultural student organizations, participating in cultural exchange activities, or building personal relationships across ethnic or national boundaries [26]. Such interactions provide the contextual information needed to update, test, and improve cultural knowledge and understanding.

Carefully organized and meaningful intercultural contact provides students with the opportunity to practice and improve communication strategies in an authentic setting. When they participate in international events, study abroad programs, or interact with peers from other cultures on a regular basis, they often have to decipher unfamiliar verbal and nonverbal cues, recognize their meanings, and adjust their communication style accordingly.

Cultural immersion strategies include study abroad programs, short-term international internships, multicultural campus events, multicultural festivals jointly organized by domestic and international student organizations, student discussion clubs, and more.

Both in-class and extracurricular activities should include activities that promote interpersonal adaptation, intercultural dialogue, and collaborative problem-solving. Examples include structured intercultural debate series, virtual exchange programs that bring students together with peers from abroad for joint projects, and mentoring systems, in which students from different linguistic and cultural groups work together to develop presentations or research reports. Group assignments by students representing different cultures can create a comfortable creative environment for developing communication skills and at the same time improve mutual understanding. In addition, teacher training programs can equip educators with the skills needed to model and implement inclusive communication practices in multinational classrooms [27].

Also, with the increasing internationalization of educational institutions, virtual mobility programs are becoming increasingly popular [28].

Virtual mobility is considered as the use of information and communication technologies to obtain the benefits of physical mobility without the need for geographical movement. It can be both a form of academic mobility (online learning in foreign universities) and the opportunity to work, communicate and obtain education using the Internet. It allows overcoming geographical and physical limitations and can be used in education in the form of online courses, webinars, virtual laboratories, training in virtual reality, for the implementation of international projects and cooperation with peers and colleagues from different countries. In the student environment, it can be a set of activities supported by information and communication technologies that promote international cooperation in the context of teaching and learning. Among the advantages of virtual mobility is that it allows people with disabilities to participate in educational and professional programs, since to obtain a quality education you do not need to change your place of residence, it allows you to study and work at a convenient pace and at a convenient time from anywhere in the world.

In the context of intercultural communication, virtual mobility allows participants from different locations to exchange ideas regardless of distance. It creates a space for dialogue and intercultural exchange of experiences between people, creating conditions for the organization and implementation of joint research, programs and projects.

Virtual mobility has its own characteristics [28]. First of all, it is not a one-way webinar or online lecture. It focuses on interaction and dialogue, involves not just familiarization with the content of a specific course, but the development of flexible skills, intercultural awareness and intercultural understanding.

Virtual mobility can be adapted to specific tasks, it helps to establish personal and professional connections, its flexibility and potential for customization to personal plans allows people to participate in virtual mobility programs according to their interests and goals.

## **2.4 TECHNOLOGICAL SUPPORT FOR THE CULTURAL INTELLIGENCE FORMATION UNDER CONDITIONS OF A TECHNICAL UNIVERSITY**

The goal of the formation of cultural intelligence of students of a technical university is defined as preparation for contact with another culture, training in adequate verbal and non-verbal behavior in the conditions of a foreign culture, the formation of a transnational culture of a future specialist. The organization of such training requires carefully selected methods and educational materials that take into account the diversity of world cultures, the features of the future professional activity of future specialists and the multimodality of modern education.

It is advisable to rely on various theoretical principles regarding human nature, cognitive processes, behavior, communication methods and research methods in the process of preparation for educational and extracurricular activities. This is primarily a functionalist approach based on psychological data and aimed at describing and predicting the behavior of communicators; an interpretative approach, based on research in the field of anthropology and sociolinguistics, is descriptive in nature and proceeds from the fact that culture is created and exists due to human activity; a critical approach based on the perception of culture as a sphere of rivalry, taking into account the economic and political forces that influence the characteristics of communication [29].

Guided by these principles, CQ formation in students of technical specialties of Kharkiv National Automobile and Highway University (KhNAHU) was provided in several stages.

The first stage involved the assimilation of background information about the facts of different cultures in the form of cultural texts, as much as possible on a contrastive basis compared to the facts of one's own culture, that is, obtaining certain knowledge. At the same time, the main attention was focused on understanding communicative models within a separate cultural group.

The next stage was the interpretation of the learned facts in intercultural contact and conflict situations, the selection of ethnic, political and economic features of cultures that influence the thinking, values and behavior of representatives of a particular community, the analysis of texts, especially those created by the mass media (television programs, video materials, publications in the press), which significantly influence the culture formation of modern youth.

At the next stage, intercultural situations, in which students played the roles of representatives of different cultures, were recreated. This direction is usually implemented using functional methods related to the theory of communicative adaptation, according to which in situations of intercultural communication people often change the models of their communicative behavior, adapting to the models of partners. For example, when communicating with foreigners we can speak slower and clearer, use less jargon, facilitating the process of understanding for the interlocutor.

Taking into account the components of CQ, a training manual "Theory and Practice of Intercultural Communication" [30] was developed, which is posted on the educational website of the KhNAHU.

The manual, based on the theoretical material and practical experience accumulated by the authors, attempts to give a generalized idea of the model of teaching intercultural communication using the English language, which can be used by future specialists to establish intercultural contacts.

The training course systematically presents the main problems and topics of intercultural communication, which ensure the development of cultural sensitivity and the ability to correctly interpret specific manifestations of communicative behavior in different cultures; it provides for the formation of practical skills and abilities for communicating with representatives of other cultures.

The manual consists of theoretical and practical parts. The theoretical part is aimed at familiarizing students with the features of intercultural communication, the second – with the features of cultures typical of different regions of the world.

The educational material covers a significant number of topics that are characteristic of intercultural communication, for example, types of communication, examples of intercultural differences, ways to improve intercultural communication, features of business negotiations, conflict resolution in a multicultural environment, the concept of ethnicity in the context of intercultural relations, etc.

The manual contains many tasks of both reproductive and discussion and creative nature. Its second part is devoted to comparing cultures of different countries, solving problem situations and performing a case study.

The authors sought to ensure that the diverse content of the manual and the proposed activities to a large extent ensure the formation of all CQ components. For example, when working with the topic "A guide to international business negotiations", students are offered the following multi-level exercises:

**Read the text carefully and choose the one best answer, a, b, c or d to each question:**

1. With which of the following must not the parties deal in the process of international business negotiations?
  - a) laws;
  - b) weather conditions;
  - c) policies;
  - d) political authorities.
2. Which of the following are private firms primarily concerned with?
  - a) donating for social needs;
  - b) creating new jobs;
  - c) paying taxes;
  - d) making profits.
3. Which event cannot have an impact on international business?
  - a) currency devaluation;
  - b) war or revolution;
  - c) changes in government;
  - d) public festivals.
4. Which of the following cannot protect companies against risks of doing business in another country?
  - a) including force majeure clauses in the contract;
  - b) insuring foreign investments;
  - c) having good relationships with partners;
  - d) employing political risk analysts.
5. In what aspects do not cultural differences show up?
  - a) decision-making styles;
  - b) language;
  - c) preferred pacing of negotiation;
  - d) attitude to eternal values.

**Discussion questions:**

- a) In what way, do you think, international business negotiations differ from domestic ones?
- b) What aspects should you keep in mind before entering the negotiation process with partners from other countries?

**Creative tasks:**

You own a company and are going to conclude your first export contract. What could be done to secure this contract and to establish long-term relations with your perspective partners?

The following tasks can be solved in the second part of the guide for comparing different cultures:

- a) Write a portrait of a typical/average Englishman, Australian, Spaniard, Arab, etc. Then comment on their similar features and cultural differences.
  - b) Write a list of DOs and DON'Ts for a friend of yours who is going as a tourist to:
    - Australia;
    - the United Arab Emirates, etc.
-

c) A businessman who ran business in various countries was not well-equipped for intercultural communication and made some mistakes in his behaviour. Find and correct them.

d) You are going to have your first business negotiations with businessmen from Spain. You want to get ready for them and try to foresee everything in detail. Write a plan and act out your version of these negotiations.

In addition to the text material, each topic of the manual is accompanied by a video of either a general cultural nature (for example, countries and continents, 7 wonders of the world, traditions and rituals, the best museums of the world, etc.), or revealing individual aspects of intercultural interaction. Tasks for understanding its content and discussion are developed for each video.

For example, the topic "Basic principles of nonverbal communication" is accompanied by the video "10 Types of Nonverbal Communication Explained in 3 minutes" (<https://www.youtube.com/watch?v=5n-LQI9e5NV8>), for which the following tasks are developed:

1. Match the notions with their definitions:

- |                        |   |
|------------------------|---|
| 1. gestures            | a. being in contact   |
| 2. posture             | b. the tone pitch and speed of your voice                       |
| 3. proximity           | c. the subconscious imitation of another person's body language |
| 4. touch               | d. deliberate movements to reinforce or replace communication   |
| 5. paralanguage        | e. the position of the body                                     |
| 6. physical appearance | f. the absence of sound or noise                                |
| 7. silence             | g. the way we dress, groom and present ourselves                |
| 8. mirroring           | h. how close we stand to each other                             |

2. Match the opposing statements:

- |   |  |
|---|--|
| A smile can express joy or politeness                                   | in others it might feel intrusive.                         |
| Upright posture communicates confidence and openness                    | it may feel overfamiliar in the other.                     |
| In some cultures, proximity is a sign of familiarity or friendliness    | <i>while</i> words fill the space.                         |
| Silence can indicate comfort, discomfort, contemplation or disagreement | a frown can show displeasure or confusion.                 |
| A light tap on the shoulder could feel supportive in one setting        | slouching can indicate insecurity, fatigue or disinterest. |

3. Match the halves of the sentences:

- |                                       |  |
|---------------------------------------|--|
| 1. Facial expressions are universal   | a. to reinforce or replace verbal communication.                 |
| 2. Happiness, anger, sadness          | b. for interpretation.   |
| 3. Eyes are often called              | c. the unconscious way of saying we are in sync with the others. |
| 4. Avoiding eye contact might suggest | d. defensiveness or discomfort.                                  |

- |   |   |
|---|---|
| 5. Gestures are deliberate movements we use | e. whether you are in Tokyo or Toronto.                   |
| 6. Crossing arms can signal                 | f. discomfort, dishonesty, or disinterest.                |
| 7. The space you allow can reflect          | g. but the meaning changes depending on how you say them. |
| 8. You may say the same words               | h. your comfort level and respect for boundaries.         |
| 9. Silence leaves room                      | i. are understood without words.                          |
| 10. Mirroring is                            | j. the windows to the soul.                               |

4. Explain why interpreting nonverbal cues is crucial for successful intercultural interaction.

To elaborate the cognitive and motivational components of CQ, we also developed original videos of a general cultural nature using the audiovisual translation (AVT) method, which were posted on the YouTube platform.

To select the content of the videos, a three-dimensional model of cultural space, popular in cultural studies, was used, characterized by three subsystems: technological culture, social culture, and spiritual culture. A generalized list of cultural components was selected and formed, which contains, in our opinion, a significant amount of cultural knowledge that can be transferred to students in a foreign language.

Technological culture was correlated with knowledge about: science as a branch of human activity aimed at developing and systematizing objective knowledge about reality; technology as the application of scientific knowledge to solve practical problems; economics as the economic activity of society.

We associated social culture, first of all, with the sphere of communication, where we distinguished: language as a complex sign system, a means of communication between representatives of a certain ethnic group; and intercultural communication as communication between representatives of different cultures.

In the sphere of spiritual culture, we included history as the science about the development of society; art as a creative reflection of reality in creative images; literature as a type of art that uses the word as the only material; religion as one of the forms of social consciousness based on belief in supernatural forces; political science as the study of political organizations and the political life of society, problems of domestic politics and international relations; sociology as the science about society, the laws of its functioning and development, and social institutions.

In accordance with the selected topic, texts were compiled, and processed in digital format in the form of video clips using AVT.

When creating the clips, we used the students' native language to a certain extent, which is a characteristic feature of AVT, and processed them in this way. Voiced parallel translation was performed, after which the students received a bilingual script, as well as video and audio recordings of new words and phrases that make up the texts in both languages for extracurricular independent study. The vocabulary for the texts and the texts themselves were placed on the screen in parallel with their translation. The material was listened to simultaneously with visual support, repeated during pauses after the speaker, and it was practiced and consolidated in the performance of creative or problem tasks in class. The method of parallel translation, the effectiveness of which is still underestimated, is used by many polyglots, and in modern audiovisual support this method can be used to assimilate large volumes of cultural material.

AVT as a promising direction in linguistic didactics is developing rapidly and successfully due to the improvement of digital technologies, significantly influencing the popularization of foreign languages and cultures. This method is defined as the transmission of verbal language in audiovisual media and, as a rule, is used as a general term to denote "screen translation", "multimedia translation", "multimodal translation" or "film translation" [31].

The multimedia nature of audiovisual programs allows combining acoustic and visual channels, which, together with verbal and nonverbal aspects of communication, provide a significant impact on the assimilation of linguistic and extralinguistic material.

To assess the level of CQ formation by all the described means, we used a proven, reliable and valid diagnostic toolbox proposed by the authors of the CQ concept [15].

Based on the four-factor model of CQ, the researchers developed the "Cultural Intelligence Scale" (CQS), which consists of 20 items, four of which assess metacognitive CQ, six items assess cognitive CQ, five items assess motivational CQ, and five items assess behavioral CQ (**Table 2.1**). Students were asked to rate their level of agreement with each of the following statements using the following scale: 1 – strongly disagree; 2 – disagree; 3 – tend to disagree; 4 – difficult to answer; 5 – tend to agree; 6 – agree; 7 – strongly agree.

● **Table 2.1** Cultural Intelligence Scale

CQ component	No.	Statements
		1 2 3
Metacognitive CQ	1	I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds
	2	I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me
	3	I am conscious of the cultural knowledge I apply to cross-cultural interactions
	4	I check the accuracy of my cultural knowledge as I interact with people from different cultures
Cognitive CQ	5	I know the legal and economic systems of other cultures
	6	I know the rules (e.g., vocabulary, grammar) of other languages
	7	I know the cultural values and religious beliefs of other cultures
	8	I know the marriage systems of other cultures
	9	I know the arts and crafts of other cultures
	10	I know the rules for expressing non-verbal behaviors in other cultures
Motivational CQ	11	I enjoy interacting with people from different cultures
	12	I am confident that I can socialize with locals in a culture that is unfamiliar to me
	13	I am sure I can deal with the stresses of adjusting to a culture that is new to me
	14	I enjoy living in cultures that are unfamiliar to me

Continuation of Table 2.1

1	2	3
	15	I am confident that I can get accustomed to the shopping conditions in a different culture
Behavioral CQ	16	I change my verbal behaviour (e.g., accent, tone) when a cross-cultural interaction requires it
	17	I use pause and silence differently to suit different cross-cultural situations
	18	I vary the rate of my speaking when a cross-cultural situation requires it
	19	I change my non-verbal behaviors when a cross-cultural situation requires it
	20	I alter my facial expression when a cross-cultural interaction requires it

To calculate the scores separately for each component, it was necessary to consult the **Table 2.2**.

● **Table 2.2** Calculation of scores for CQ components

Component name	Question number
Metacognitive	1, 5, 10, 14
Cognitive	2, 6, 9, 11, 15, 18
Motivational	3, 7, 12, 16, 19
Behavioral	4, 8, 13, 17, 20

To determine the total score, the total number of points for all items of the questionnaire is calculated:

- from 0 to 55 – very low cultural intelligence;
- from 55 to 71 – low cultural intelligence;
- from 71 to 103 – average cultural intelligence;
- from 103 to 119 – high cultural intelligence;
- from 119 and above – very high cultural intelligence.

Studies of the psychometric characteristics of the questionnaire "Cultural Intelligence Scale" demonstrated good internal consistency: Cronbach's alpha coefficient for the total CQ indicator was 0.90, and the "item-total" correlations ranged from 0.32 to 0.58. This means that the questions of the scale are closely interconnected and, taken together, measure the same concept.

The results obtained by processing the answers to the questionnaire at the beginning and after working with the course, which lasted for one academic year, showed that if at the beginning of the academic year the percentage of students with a high CQ level was 7%, low CQ – 34% and average – 59%, then after completing the course using various methods these indicators changed significantly. The percentage of students with a low level decreased almost by half and amounted to 16%, the percentage of students with a high CQ level increased significantly and amounted to 36%, the number of students with an average level decreased accordingly to 48%, which may indicate the effectiveness of the proposed approach.

## 2.5 DISCUSSION OF THE RESULTS OF SECTION 2

The modern globalized world, increasing academic and scientific mobility have led to multilingual societies, in which sociocultural exchanges between native and non-native speakers have become a common practice, reinforcing the importance of not only linguistic but also intercultural training.

In the scientific literature, the result of intercultural training is denoted by such terms as cross-cultural competence, intercultural competence, cultural sensitivity, cultural awareness, multicultural literacy and some others. All of these terms refer to the ability to understand people of different cultural backgrounds, communicate and interact effectively with them, although different terms may emphasize specific aspects of intercultural communication.

Cultural intelligence is another term close to this group, which, in our opinion, combines most of the characteristics that a modern specialist trained for intercultural interaction should have. If we summarize all the above-listed features of the CQ components, we can distinguish the following essential features. The behavioral component of CQ is the ability to adapt both verbal and non-verbal behavior to ensure its effectiveness in various cultures; the motivational component is manifested in a person's desire to learn something new; the cognitive component is associated with the ability to analyze and evaluate the degree of variability of other cultures compared to one's own culture; the metacognitive component is correlated with the degree of a person's conscious cultural awareness and his/her ability to adapt his/her mental map as an organic way to organize ideas, concepts, tasks, without limiting him/herself to a linear structure during intercultural interaction.

One of the important characteristics of CQ is that it can be formed and developed.

In the conditions of a technical university, the programs of which prioritize special technical knowledge and skills, it is very difficult to find an opportunity to teach a course of intercultural communication as a separate discipline. But given the above-substantiated importance of this aspect of specialist training, it is necessary to look for opportunities to integrate the course or its individual elements into the content of teaching other, usually humanitarian, disciplines, one of which is a foreign language.

Different specialties of technical universities allocate different number of hours to studying a foreign language. For example, at KhNAHU, students specializing in mechanical engineering or construction and civil engineering are allocated 7 credits for studying a foreign language, while students studying under the Automation, Computer-Integrated Technologies and Robotics program are allocated 17 credits. Accordingly, in the second case, the language learning program can be much more saturated with elements of cross-cultural training and lead to better results.

In general, the step-by-step improvement of curricula taking into account the geopolitical context, future professional needs, and general cultural erudition of students is an urgent task for teachers.

A distinctive feature of the described approach to CQ formation is its reliance on an eclectic method that integrates the techniques of the grammatical-translation method, communicative language teaching, audio-lingual method, problem-based learning, and the method of audiovisual translation. This flexible method has become popular because it allows for more personalized, engaging, and, accordingly, attractive learning for students.

Today's learning of foreign languages and cultures is greatly facilitated by the capabilities of information technology, which allow students to improve their communication strategies and acquire intercultural interaction skills in real cultural situations.

Acquaintance with a diverse cultural environment through personal relationships, curriculum content or digital content stimulates reflection and activates the components of cultural intelligence in practice.

Given the inevitability of globalization processes, on the one hand, and the steady development of information technologies, on the other, the relevance of developing new approaches to intercultural training is only increasing. Empirical research into various psychological, sociological and linguistic aspects of such training, new approaches to the development of students' practical skills using interactive methods, improving foreign language teaching methods in the aspect of cross-cultural communication, expanding the horizons of international cooperation, which is an authentic basis for the formation of intercultural interaction skills are necessary.

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## FORMATION OF THE PROFESSIONAL TERMINOLOGICAL COMPETENCE OF STUDENTS OF UKRAINIAN HIGHER EDUCATION INSTITUTIONS UNDER CONDITIONS OF EDUCATION DIGITAL TRANSFORMATION

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### ABSTRACT

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The paper outlines the theoretical foundations and practical aspects of the formation of the professional terminological competence of students of Ukrainian higher education institutions in the conditions of digital transformation of the educational space. The work is annotated in the field of linguistics, pedagogy and teaching methods of professional disciplines on the issue of the nature of the formation of an educational environment focused on professional training, significant obstacles are characterized and prospects for the integration of digital technologies into the system of terminological training of higher education applicants are outlined. Since there is a need to generalize theoretical approaches and develop complex models for the development of terminological competence, especially in the conditions of war in Ukraine, the impact of digital transformation on the educational process is analyzed, the role of digitalization of the educational environment and the use of new technologies in the work of specialists of various profiles is revealed. Modern methodological approaches to the formation of the professional terminological competence of students in various specialties in the conditions of digitalization of education are revealed. The contribution of national and international projects (UkrNLP Corpora, ULIF, SUCHO, Ukraïnica) to the creation of an infrastructure for educational and research activities is analyzed. The feasibility of a complex approach that combines methodological means of learning with access to digital resources and participation in educational and scientific initiatives is proven as a condition for training competitive specialists with a high level of professional terminological and digital competence. The author's model of the formation of the professional terminological competence of students at the Kharkiv National Automobile and Highway University (KhNAHU) is presented, which integrates modern digital technologies, methodological approaches and educational resources.

### KEYWORDS

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Scientific terminology, professional terminological competence, professional terminology, systematicity of terminology, education digital transformation.

### 3.1 METHODOLOGICAL APPROACHES TO DETERMINING THE ESSENCE OF THE PROFESSIONAL TERMINOLOGICAL COMPETENCE OF EDUCATION SEEKERS

The current stage of development of the educational sector is marked by the intensive introduction of digital technologies, which significantly transforms approaches to the organization of the educational process. In this regard, it is worth noting that with the rapid development of technologies, especially in the field

of information and communication activities, the emergence of new types of specialization of enterprises, the digitalization of society, the active formation of the information space and the growth of the importance of specialized knowledge necessitate a review of the substantive and methodological principles of professional training of students. One of the leading components of this training is professional terminological competence, which ensures effective professional communication, effective processing of specialized literature, participation in scientific discussions and increases the professional mobility of future specialists.

Professional terminological competence includes knowledge of the terms of a certain field, the ability to correctly apply them in oral and written speech, the ability to interpret terminological units and use them in various communicative situations. In the conditions of education digital transformation, the possibilities for its formation are significantly expanded due to the use of electronic educational materials, interactive platforms, online courses, specialized terminology bases and artificial intelligence tools.

Taking into account the above, it is advisable to substantiate the conceptual scope of the terms "professional terminological competence" and "education digital transformation", which constitute the foundation for further research. Clarifying their meaning allows ensuring adequate use in scientific work.

Despite the fact that today in Ukrainian studies and linguistic didactics there has appeared a significant number of thorough theoretical works devoted to the study of various aspects of term formation, terminological systems and standardization of professional vocabulary, and the number of studies aimed at describing and systematizing the terminological apparatus of certain branches of knowledge has also noticeably increased, there are still grounds to argue that in the context of the proposed investigation, theoretical issues require special and detailed consideration. Clarification of concepts and in-depth coverage of conceptual foundations provides an opportunity to clearly outline the terminological apparatus necessary for further analysis of the phenomenon of professional terminological competence, as well as for identifying essential characteristics, structural components and methodological approaches to its formation.

It is clear that the implementation of the above provisions, taking into account current trends in the development of professional education, in particular, increasing the requirements for the quality of professional communication and a practically-oriented approach, can really become a guarantee of a thorough theoretical understanding of the category of professional terminological competence itself as an integral formation that combines linguistic, cognitive, communicative and operational-practical components. That is why, turning to scientific developments on the theoretical foundations of terminology, cognitive linguistics and language-didactic strategies, we will try not only to expand the analytical horizons of the study, but also to create a conceptually sound basis for further determining the content parameters of the formation of the professional terminological competence of future specialists.

First of all, the term "competence" in scientific literature is referred to as a dynamic combination of knowledge, skills and practical abilities, ways of thinking, professional, worldview and civic qualities, moral and ethical values, which determines a person's ability to successfully carry out professional and further educational activities and is the result of training at a certain level of higher education [1].

N. Artikutsa, G. Bondarenko, N. Golub, I. Gumenyuk, L. Dmytruk, I. Kochan, G. Krokmalna, G. Matsyuk, G. Onufrienko, T. Panko, I. Snigurova, N. Stankevych, D. Furt, I. Kharchenko, Ya. Yanush and others write about terminology in the educational process.

In the scientific works of Ukrainian terminologists (V. Dubichynskyi, Z. Matsyuk, R. Minyailo, B. Rytsar, L. Symonenko, O. Taran and others) there is a tendency towards an in-depth analysis of terminological systems, standardization of terms and the importance of compiling terminological dictionaries, the influence of professional communication on the quality of training of specialists.

In turn, lexicologists note that within the framework of special vocabulary, the terminology of various branches of knowledge occupies a central place, and the volume of such vocabulary (terms and nomenclature names) has a tendency to steadily grow. The observed trend is quite understandable, since the role of science and technology in the life of modern society is constantly growing, and in connection with this, the volume of scientific information is also increasing (after all, it is not for nothing that modern civilization is classified as informational). Modern civilization requires rapid processing and transmission of information, which is possible only under the condition of accurate naming of the corresponding concepts or phenomena, and therefore, under the condition of the existence of lexemes that are characterized by both semantic narrowness and exhaustive significant depth. It is thanks to such features of special lexemes that it is possible to effectively and rationally use language as a means, by which human knowledge is formed, consolidated and transmitted.

It is clear that in the lexical fund of the Ukrainian language, terminological vocabulary as a type of special vocabulary occupies a significant place, including three main types: terms, nomenclature signs, professionalisms, which are designed to serve the scientific sphere of human knowledge and activity [2].

Given the above, it became quite natural within the framework of linguistic teaching to single out a special branch of scientific knowledge – terminology studies as a science focused on the research of terminological (specialized) vocabulary. It was the problems associated with the specific vocabulary of specialized languages that gave rise to the need to single out a separate science – terminology studies.

Thus, the isolation of terminology studies as a separate scientific discipline, combining linguistic, logical, semiotic and other approaches, is directly related to the formation of the professional terminological competence of specialists. Since a term can be fully described only under the condition of a comprehensive analysis of its content, functions and structure, a future specialist must possess not only linguistic knowledge, but also the skills to operate with terms in a broader interdisciplinary context. Given this, the development of professional terminological competence requires taking into account modern achievements of terminology studies, which provides scientifically sound approaches to the interpretation of a term and its role in professional communication.

Today, terminology studies is a completely independent science with its own tools (terminological apparatus, methods and techniques for studying the terminological lexical fund, etc.), which deals with both theoretical principles and practical issues related to terminology. Terminology studies aims to solve the following tasks: classification of special vocabulary, improvement of comparative research methods, standardization of terminological systems, compilation of terminological dictionaries, research and analysis of the influence of linguistic and extralinguistic factors on the development of modern terminology, etc. [3].

Increasingly, professional terminological competence is considered as an integral formation that combines linguistic, cognitive, communicative and cultural components. In modern scientific literature,

terminological competence is considered as a multidimensional formation that combines cognitive, speech, communicative and activity components.

Despite the fact that researchers of this issue distinguish individual features of this process, they all agree that mastering terms is a necessary basis for the formation of a specialist.

As N. Artikutsa notes, the professional terminological competence of a lawyer covers a much wider range of knowledge and skills than simple memorization of legal terms, since it involves the formation of a deep terminological culture, which includes an understanding of the process of the emergence of terms, the rules for their precise definition, structuring and organization in dictionaries and terminological systems, which allows a specialist not only to use terms, but also to analyze them, classify them, evaluate their functional and content features, that is, to work with the terminological system at the level of a scientific researcher; in addition, the scientist emphasizes the importance of the development and standardization of legal terminology, since standardized terms contribute to increasing the accuracy and clarity of legal texts, provide unified approaches in professional communication and can serve as a reliable basis for the systematic training of highly qualified specialists who are able to navigate modern legal practice and scientific activity.

It is the mastery of professional terminology that serves as the basis for the development of specialized erudition, awareness, and professional skill. Linguistic and terminological competence, in her opinion, occupies a leading place in the structure of general professional competence. This concept reflects the close relationship between linguistic competence, which is considered a broader category in terms of content and covers all levels of the language system, and terminological competence, focused mainly on the lexical level of professional communication.

According to the researcher, the concept of competence is not limited to a set of knowledge and skills, as it covers complex abilities and personal qualities. She emphasizes that linguistic and terminological competence should be understood as a synthesis of professional and linguistic erudition, which is based on a deep understanding of the nature and specificity of professional language and terminology, their systemic vision, as well as mastery of the methodology for scientific analysis of language units, in particular terminological ones. The author also includes experience in processing specialized texts and the ability to competently solve terminological and linguistic-stylistic problems [4].

N. Golub explores the specifics of the lexical system of the didactic field, emphasizing that the core of the terminology of linguistic didactics is not only purely didactic terms, but also ones from psychology, philosophy, sociology, etc., which reflect the scientific essence of pedagogical science. She points out that the effectiveness of scientific research depends on a clear definition of the terminological minimum, it is it that provides categorical clarity, allows you to avoid ambiguities in conclusions and increases the author's professionalism. Therefore, when choosing a problem and formulating its name, the researcher should determine his/her minimum set of key terms. It will serve as a guide in the work, ensure the clarity of generalizations and conclusions, and demonstrate the appropriate level of professionalism.

N. Golub also criticizes the incorrect or inaccurate use of terms in state educational documents and scientific publications, which reduces the quality of the scientific text and gives rise to misunderstandings. The scientist's recommendation is to standardize terminology while maintaining the flexibility of the system in order to avoid excessive "rigidity" of terms, which may hinder the further development of science [5].

I. Snigurova, who studies ways to form the professional linguistic and communicative competence of future cybersecurity specialists, notes that terminological competence for the specialty "Cybersecurity and Information Protection" is an extremely important component, since understanding narrow-field terms is a necessary condition for professional activity.

The formation of the terminological competence of future cyber specialists in higher education institutions has a number of features, such as: a wide range of professional tasks; most professional materials in this field are available in foreign languages, mainly English; language disciplines in higher education institutions are taught in junior years, when students have not yet studied professional subjects. Specialists who do not have a proper command of specialized terminology are unable to develop high-quality official documentation, effectively interact with involved parties, colleagues, internal and external auditors, representatives of state cyber defense institutions (cyber police or CERT-UA), as well as with suppliers of equipment and software solutions.

I. Snigurova substantiates the relevance of the formation of terminological training of future cybersecurity specialists in Ukrainian HEIs and identifies the key tasks of this process: the creation of a coordinated and normatively fixed bank of professional terms (in particular, a dictionary of professionalisms), the analysis and systematization of the main communicative situations in the professional activities of cyber specialists, as well as the development of a multi-level system of their terminological training [6].

Another landmark work on the coverage of issues of linguistic-terminological competence is the manual by D. Furt, L. Dmytruk, which deals with the peculiarities of translating terms, and in particular technical ones. The authors give practical advice and note that the difficulties that a translator faces are the identification of terminological affiliation to a particular field.

Also, during translation, specialists should be aware of what vocabulary (general scientific, commonly used, narrowly specialized) they are working with.

As researchers note, adequate translation is impossible without a full understanding of the methods and means of terminological derivation, word-forming types of terms, their origin, classification, and functioning within the terminological system, since the translation of professional texts is not limited to the reproduction of terminological units.

Thus, the authors are convinced that the training of translators in higher education institutions should include studying a terminology course that covers the history and theoretical foundations of terminology as a science, as well as the structural and semantic features of terms as objects of translation [7].

The terminological competence of economics students is understood as the ability to effectively use professional terminology in educational and professional activities, since economists often work with English-language sources and must know correct translations, competently use terms in oral and written presentations, in particular in reports, presentations, analytics, discussions.

Terminologists express concern about the current problem of borrowings in Ukrainian financial and economic terminology, in particular regarding issues of lexical and grammatical adaptation, transliteration, and spelling of borrowed terms.

It is also necessary to pay close attention to the internationalization of terminology, easing the path to economic progress, because this simplified path of uncritical and sometimes even thoughtless copying,

which impoverishes both one's own terminology, one's own economic thought, and the national mentality in general, often, on the contrary, complicates the understanding and reproduction of concepts, outlining them with mechanically borrowed terms.

Therefore, the authors call for this revision to be carried out constructively, realistically taking into account and embodying the rich nominative possibilities, traditions, and adaptive properties of our language: to modify individual terms and terminological compounds, to adapt them to the word-forming means of the Ukrainian language, to avoid inappropriate foreign influences (of course, while preserving the constructive international background, in sources – based on Latin, inherent in many European languages, the basis of numerous terms, which has long been instilled and adapted in the Ukrainian language).

The effectiveness of studying both basic and professionally oriented disciplines is largely determined by the level of students' proficiency in the language of the specialty, the central element of which is modern economic terminology [8].

Thanks to mastering terminology disciplines, students of technical specialties develop terminological competence, which is an important component of their professional training.

According to the research of scientist I. Kochan, it is important that the formation of this competence begins at the stage of training, where students must study not only theoretical aspects of terminology, but also practical skills in working with terms in specific professional contexts.

Technical terms are often regulated by state and international standards (ISO, IEC, SSU), therefore, applicants must know that the term has an official, normative definition and that it is used in documentation. The terminology of technical disciplines is inextricably linked with physical quantities, so it is important to know the correct units of measurement and symbols and ways of recording them [9].

Mastering professional terminology is a key component of the professional training of students of highway construction specialties, as it ensures the accuracy of communication and effective mastery of special disciplines. Future engineers must understand the content of basic and specialized concepts, such as *асфальтобетон, щебінь, дорожнє покриття, підґрунтя, армування, відсів, ущільнення*, and also be able to determine their industry affiliation and apply them in accordance with the professional context.

Knowledge of standardized terms enshrined in regulatory documents, as well as the correct use of units of measurement and technical symbols when performing calculations, designing highways or drawing up specifications for highway materials, is of great importance.

Since modern construction literature is often in English, students must navigate in the interlingual equivalents: *asphalt concrete – асфальтобетон, aggregate – щебінь, reinforcement – армування, subgrade – підґрунтя*. In addition, it is important to distinguish between related concepts, for example, coating ≠ subgrade, compaction ≠ compression, which ensures the accuracy of calculations and minimizes the risk of errors during construction.

The acquired skills form the terminological competence necessary for working with design documentation, drawings, technical specifications and other professional texts, which is an integral part of the training of a highly qualified highway construction engineer.

Innovative technologies in teaching terminology disciplines are an important component of the modern educational process, as they allow not only to improve the assimilation of the material, but also to make

learning more interactive and accessible to students. These technologies can contribute to the development of students' competencies, improve their understanding of the specifics of terminological systems and ensure the quality of training of specialists in the automotive and highway construction industries.

One of the effective ways to improve traditional teaching methods is the use of information and communication technologies, which is confirmed by many years of pedagogical practice. The use of ICT in the process of working out terminology problems, as well as in the course of independent and research activities of students, creates conditions for a more active and more conscious assimilation of educational material [2].

Based on scientific concepts developed in the works of modern linguists and representatives of the field of pedagogical sciences, we will highlight the components of the conceptual corpus of professional terminological competence, such as: cognitive – knowledge of terms, their definitions, classifications, places in the terminological system; speech – the ability to correctly use terms in oral and written communication; communicative – the ability to professional interaction using terminological tools; practice-oriented – the use of terminology in practical professional tasks; informational – the ability to work with various sources of terminological information, and what is especially relevant – e-resources [10].

### **3.2 RELEVANCE OF HIGHER EDUCATION DIGITAL TRANSFORMATION**

Global progress in modern conditions is characterized by dynamic shifts in all spheres of economy, technology, science, education, culture. One of the factors contributing to the active course of these processes is the active development of digital transformation, which is able to ensure adequate exchange of information between all subjects, on which the success of the implementation of certain tasks of state and social construction depends. The educational process is experiencing a fundamentally new stage of its functioning, which has received the interpretation of education digital transformation, which involves the comprehensive use of modern digital services, distance learning platforms and electronic educational resources and is defined as a strategic task of central education management bodies, heads of higher education institutions and other authorized entities responsible for the implementation of state policy in the field of modernization of the educational infrastructure and improvement of the quality of educational services [11].

Scientific research shows that the digital transformation of education and science contributes to increasing the competitiveness of higher education institutions, expanding the possibilities of distance learning and integrating Ukrainian universities into the European educational space, and also stimulates the formation of modern digital competencies in students and teachers.

Despite numerous studies devoted to the introduction of digital technologies into the educational process, as well as publications describing practical cases and models of distance and blended learning, there is still an urgent need for a thorough theoretical analysis of the essence of this phenomenon.

Analytical study of it allows us to outline the conceptual framework of digital transformation, clarify its key components and determine the methodological principles of implementation in various educational contexts.

The team of authors of our work is inclined to believe that digital transformation should be considered not only as a technical update of educational resources and platforms, but also as a systemic change in pedagogical practices, organizational structures and strategies for managing the educational process.

Reflecting on the broader context of education digital transformation, it is worth outlining it as a complex phenomenon that combines socio-cultural, technological, pedagogical components and provides new opportunities for increasing the effectiveness of learning, interaction with interactive elements and individually directed educational development. In the context of global transformations of educational systems, digitalization is becoming a key factor in the development of higher education institutions. The Ministry of Education and Science of Ukraine (MES) defines digitalization as one of the priority areas of reforming education and science, implementing the projects "e-University" (a concept and a set of digital services that provide e-management of the activities of a higher education institution), "e-Science" (digital management of scientific activities and research results), and modernization of digital services for higher education institutions. The implementation of these initiatives allows transferring management, educational, and administrative processes into a digital format, increasing the accessibility, transparency, and efficiency of educational services [11]. Without understanding the tasks that the MES sets for itself today in the context of digitalization, it is impossible to fully study the relevance of the digital transformation of higher education.

However, first of all, the scientific concepts of "digitalization", "digitization", "digital transformation" require semantic analysis for further correct use in a scientific context.

As noted in O. Shparyk's study on the distinction between these highly specialized, but fundamentally different terms, the lexeme "digitalization" means the transition to digital technologies, that is, the inclusion or improvement of processes through the use of digital technologies and digitization (the process of converting information from analog form to digital (digital files, document scanning, transferring lectures to video format) of relevant data) [12].

Therefore, digitalization involves and is a kind of subcategory of digitization. Digitization increases the productivity and efficiency of the process, while simultaneously reducing costs, but does not change or transform it. That is, digitalization converts the process, in which people manage actions or series of actions, into a programmatic one and optimizes internal processes (for example, the transition of a university to an electronic document submission system).

The term "digital transformation" is a kind of evolution of the sphere of activity (in particular, education), which is provided by digital technologies.

The task of modern educators is to ensure the development of the necessary digital competence of students, the ability to take advantage of the benefits that technology can bring to the teaching and learning process, in particular, providing tools for innovative education and promoting the personalization of learning, the development of creativity, the effective and safe use of digital technologies. It is assumed that education systems that cannot adapt to the digital world will undoubtedly lose out due to lagging behind in the digital world.

Foreign researchers emphasize the need for teachers to replace outdated educational programs, educators must also develop methods that will encourage students to adapt to the educational environment and learn productively. To do this, it is reasonable for teachers to communicate with students in their language,

but without neglecting the important content of thinking methods, which involves less detailed instructions, more analogies and freedom in acquiring knowledge [13].

Therefore, education should combine traditional knowledge with the latest technologies, in particular software, robotics, genomics, hardware, etc. The educational process should involve the study of historical aspects with the use of progressive digital technologies, which allows combining the diachronic content of the past with the synchronous experience of modern digital learning tools.

Today, higher education institutions face challenges: ensuring modern digital infrastructure, increasing the digital literacy of teachers and students, implementing quality standards for online learning, and ensuring cybersecurity and data protection [14]. Thus, the digitalization of higher education in Ukraine is not just a technical upgrade, but a strategic transformation that encompasses educational, scientific, and administrative dimensions, contributing to the modernization of educational programs, increasing the efficiency of management, and integrating Ukrainian education into the European educational space [15].

The latest MES initiatives include partnerships with international providers of educational IT solutions, including artificial intelligence platforms, video, and online services, which creates an interactive, flexible, and adaptive learning environment.

In their reflections on the essence of the educational digital transformation, scientists note the formation of competencies among teachers and students that ensure the adequate use of digital resources, critical understanding of information and integration of technologies into teaching practice, not simply the development of tools and platforms.

At the same time, the digital transformation of higher education is associated with a number of challenges and limitations that require an integrated approach to overcome them. One of the main problems remains the insufficient digital literacy of teachers and students, which limits the effective use of modern platforms, distance learning services and interactive resources. Many teachers need additional preparation and advanced training in order not only to master the tools, but also to integrate them into their own teaching methods, ensuring effective learning and the formation of students' competencies.

A significant challenge is the unevenness of the digital infrastructure between educational institutions and regions of the country. In some universities and research institutions, access to modern servers, high-speed Internet, specialized software and digital resources is limited, which creates differences in the quality of educational services and opportunities for students in different regions. This factor complicates the implementation of blended and distance learning at a level that meets world standards, and also affects the integration of Ukrainian institutions into the international educational space.

At the same time, one should not ignore the fact that the transformation of educational systems in Ukraine is taking place in the conditions of full-scale war, which significantly affects the functioning of higher education institutions, determining special challenges and priorities for their digital development.

In their study, a team of authors (S. Ilyashenko, Yu. Shipulina, N. Ilyashenko) analyzes the process of digital transformation of higher education institutions in the conditions of military conflict. During the war, the educational process faced a number of new challenges: a significant number of people were evacuated from temporarily occupied territories, some were left homeless and have refugee status, but they strive to continue their studies with their class or course. In view of this, the authors believe that digital transformation

is of paramount importance for ensuring the continuity of the educational process in Ukraine. In addition to traditional educational institutions, the integration of digital technologies during the war is also appropriate in those areas where professional retraining and advanced training of working people are possible [16].

Another important aspect is the lack of uniform quality standards for online learning, which makes it difficult to assess the results of educational activities and monitor the effectiveness of digital platforms. If clear performance indicators, diagnostic methods and didactic conscience are not determined in time, distance education may become incomplete and, therefore, of poor quality, and the practice of learning will become declarative, which will affect the development of competencies.

We should not forget about the importance of personal data protection (a specific part of security aimed only at protecting information about real people), as well as cybersecurity (a broad area of protecting digital systems and networks from threats, for example, program security, recovery from attacks, etc.). A safe educational environment is an important task for educators, and not just a technical issue, which is fixed in the concept of educating young people in virtual space. If pedagogically developed methods of involving digital security in the educational process, which include both self-training of educators and revision of training modules, are not followed, digital risks for effective work, as well as leakage of confidential information, cannot be avoided [15].

Social and psychological challenges of digitalization are also important. Traditional communication between a teacher and a student has been replaced by a virtual one, due to which, based on the purpose of learning, the curriculum is being rebuilt and the educational process is being organized in accordance with the tasks of forming and developing those intellectual abilities that are necessary for a certain type of activity. Due to the constant flow of information, applicants often face overload, emotional and nervous overstrain, which can reduce concentration, the effectiveness of learning and the acquisition of professional terminology [17].

The war in Ukraine has caused many problems in educational activities, but it is precisely digital transformation, as a complex socio-cultural process, that contributes to improving the quality of education under these conditions.

Thus, the digital transformation of higher education, despite its numerous advantages and prospects, is a process that is accompanied by a complex of pedagogical, technological, organizational and social challenges. However, having overcome these barriers, we must stimulate prospects for the successful formation of students' professional terminological competence and the development of a modern educational infrastructure capable of meeting international standards and requirements of the 21<sup>st</sup> century.

### **3.3 METHODOLOGICAL APPROACHES TO THE PROFESSIONAL TERMINOLOGICAL COMPETENCE FORMATION IN STUDENTS OF VARIOUS SPECIALTIES IN THE DIGITAL EDUCATIONAL ENVIRONMENT**

Professional terminological competence, taking into account the use of various innovations in the modern educational space, acquires a completely new meaning, since the computerization of the educational process opens up wide opportunities for mastering specialized vocabulary, integrating theoretical

knowledge with practical application, as well as for the development of communicative and cognitive skills relevant for specialists of various disciplines.

Examples of research on technological innovations in teaching terminological disciplines can be traced in the scientific works of M. Dzyuba, L. Malevych, O. Taran, etc.

Today, mastering a language, developing science and culture through the involvement of digital resources has become more convenient and easier. For example, educational and scientific programs that create digital educational collections enable access to artistic and special contexts, which helps to standardize the terminological corpus, serves as a basis for the educational process and scientific achievements. It should be noted that involving students in active digital programs, supporting such projects, as well as the use of methodological techniques in the educational process contribute to the high-quality training of specialists.

The most effective methodological approaches that are used today to form terminological competence include:

- interactive exercises – online tests, tasks with self-checking, group or individual exercises for analyzing texts, diagrams, drawings or models (depending on the specialty). Such exercises allow students to practically apply terms, check their meaning and context, which contributes to memorization and a deeper understanding of vocabulary;

- project activities – complex tasks that involve modeling technologies, developing algorithms, creating presentations or reports using professional terminology. This approach develops the ability to integrate knowledge, work with information sources, and solve practical problems;

- work with terminology corpora and glossaries – analysis of professional texts, regulatory documents, specialized articles; formation of own glossaries; classification and systematization of terms; testing knowledge. Such work deepens the cognitive and informational components of competence;

- case study learning – consideration of real or simulated professional situations, decision-making taking into account the context, norms, standards and professional terminology. This stimulates analytical thinking, practical skills and communicative competence;

- digital simulations and coaches – virtual laboratories, process modeling, application of specialized terminology in a simulated professional environment. This approach allows you to test practical skills without risks, increases motivation, simplifies the assimilation of complex terms and procedures.

These approaches are not just methods, but components of a comprehensive educational strategy that takes into account different learning styles, student specialization and requirements for professional training in the 21st century.

Today, it is becoming increasingly important not only how to teach, but also on what resources – that is, whether teachers and students have access to up-to-date corpora of texts, digital dictionaries, NLP tools, databases that cover terminology and professional texts from various industries.

Some of these projects:

- UkrNLP Corpora is a knowledge center established in 2023 at the University of Jena (Germany) that provides access to Ukrainian language corpora, dictionaries, datasets (structured data collections intended for training, validating and testing computer learning and natural language processing models) and

NLP tools. This creates a basic infrastructure for research, linguistic analysis, translation, and creation of terminological resources [18].

– Ukrainian Language Information Fund (ULIF NAS of Ukraine) is a national organization that supports the development of language information resources, dictionaries and corpora of the Ukrainian language, which are important for the standardization of terminology, translation, and professional communication in various fields [19];

– SUCHO (Saving Ukrainian Cultural Heritage Online) is an international volunteer initiative that digitizes and preserves the websites of libraries, archives, museums, and other cultural and scientific institutions in Ukraine that are at risk, preserving tens of terabytes of data. This allows for the preservation of cultural and intellectual resources, including scientific publications and documents – which is relevant for humanitarian and applied research [20];

– Ukraïnica (supported by the Harvard Graduate School of Education and the Ukrainian Institute – a database of primary sources on Ukrainian studies: literature, historical, cultural, and social texts, providing a resource for research in the humanities, sociology, cultural studies, and linguistics [21].

Such initiatives as SUCHO often collaborate with international digital humanities networks to provide access to digital copies of documents, archives, and scientific publications; this is especially important in crisis situations.

The presence and access to such projects allows you to establish a network that is extremely necessary for implementing methods of organizing the educational process. Interactive exercises, projects, simulations or methods of analyzing specific cases will be significantly limited in quality and depth without corpora, dictionaries, translations, NLP tools and resource bases.

It is especially important that these projects allow students and researchers to work regardless of their location – which is of great importance in conditions of internal or external challenges, social, political or security. For example, volunteer initiatives that store digital copies of educational and scientific resources allow you to preserve the scientific heritage, support the educational process and provide access to information even in conditions where physical archives are unavailable.

We can confidently conclude that the successful formation of professional terminological competence today should be built on an integrated approach that combines:

- systematic methodological tools for learning (interactive exercises, projects, corpus work, cases, simulations);
- access to digital resources (corpora, dictionaries, archives, databases);
- participation in and support of scientific and educational projects that create and support these resources, which ensures the relevance, reliability and long-term sustainability of the educational and research process.

This approach makes it possible to prepare specialists who are able to work in various fields – technical, natural, humanitarian, social – with professional, standardized vocabulary, meet modern requirements, adapt to changes and use modern means of working with information.

In the current conditions of education digital transformation, methodological approaches to the formation of professional terminological competence should be implemented in close connection with the

creation and development of digital resources. Interactive exercises, project activities, corpus work, case methods, digital simulations – all this is effective only when access to the relevant resources is provided.

Modern projects such as UkrNLP Corpora, ULIF, SUCHO, Ukraïnica, create the basis for such work. Therefore, the strategic task of educational institutions, scientific establishments, and communities is to support, develop, and integrate these resources and methodologies, creating conditions for training competitive specialists with professionally correct terminology and digital literacy.

### **3.4 PRACTICAL RECOMMENDATIONS FOR THE PROFESSIONAL TERMINOLOGICAL COMPETENCE FORMATION IN STUDENTS OF HIGHWAY CONSTRUCTION SPECIALTIES USING DIGITAL TECHNOLOGIES**

The educational process in Ukraine has undergone significant changes due to military operations in the country. Teachers of many Ukrainian universities found themselves in conditions of extremely rapid adaptation to the digital educational environment, which requires educators to focus maximum efforts on self-improvement, mastering new knowledge to improve teaching, diversifying methods of presenting material and survey methods. Many educational institutions were forced to switch to a blended learning format or even distance learning. KhNAHU (Kharkiv National Automobile and Highway University) was no exception, where online learning became the main form of implementing educational programs.

Educational and practical tasks of the disciplines "Automotive and Highway Terminology" and "Ukrainian Language (for Professional Purposes)" at KhNAHU are implemented using innovative technologies:

1. The use of e-learning platforms (for example, Moodle) makes it possible to create courses, interactive tests and tasks that enable students to work with specialized terms in various contexts and train in terminological issues even outside the classroom [22].

2. Students use mobile applications (for example, Quizlet, Anki) to study terms by creating their own cards or tasks. The tasks should ideally reproduce the terminology of a specific industry, for example, as implemented for students of automotive and highway specialties: the front side of the virtual card is "rubber-bitumen mastic", the back side is "building material obtained on the basis of bitumen with the addition of rubber crumb; used for sealing joints and covering surfaces"; front side – "crushed stone-mastic asphalt concrete", back side – "type of asphalt concrete with a high content of crushed stone and mastic, which provides increased wear resistance of the highway surface".

Separate sets of cards with the names of thematic groups have been created, for example: "Highway construction materials", "Types of asphalt concrete", "Additives and their functions", "Types of soils and mixtures".

In case of the need to use English-language equivalents (for example, for working with international technical documentation), bilingual cards are used: LHS (front side) – "hydrophobic-plasticizing additive", RHS (back side) – "hydrophobic-plasticizing additive – a component that improves the water-repellent properties of the concrete mixture and its plasticity".

3. In order to increase students' interest and effectively master the classifications of highway construction terminology, elements of game practices have been introduced into the educational process.

In particular, the use of online games, thematic quests and quizzes based on the creation of hyponymic groups on the basis of various distinguishing classification features is proposed.

Role-playing games are very useful for gamification of the topic of terms polysemy. Students act as engineers, designers or builders, where they need to use terms in different contexts. This allows them to apply theoretical knowledge in practice. Students are given scenarios of highway construction, where they must choose the correct term from several options depending on the situation.

4. By using machine translation and terminology databases to translate technical vocabulary, you can develop students' skills in contextual translation of technical terms using digital tools, teach them to distinguish between translation for a mass audience and experts, and consolidate their knowledge of terms in the field of highway and automobile construction.

Task: choose 10 technical terms from the highway construction industry in a foreign language (for example, German, French, or English). Examples are given below: soscel, chaussee, binder course, mastic asphalt. Translate each term using DeepL Translator.

Find the translation and definition of these terms in a terminology database or technical glossary.

5. Using infographics and visual term maps helps students understand the relationships between terms and their meanings. Interactive diagrams and maps allow you to visualize complex terminological concepts and structure them using different colors or connections.

Task: compare the translation results and justify which option is the most successful in a professional context, and also indicate the reason for the choice: accuracy, meaning, usability in a professional environment, compliance with the Ukrainian terminological norm.

6. The use of automatic assessment systems allows you to quickly and effectively check students' knowledge, saving teachers' time and helping students work on their own mistakes.

Example task: choose the correct Ukrainian equivalent for a foreign-language term. Choosing the correct match (multiple choice):

1. Penetration is    a. щільність    b. в'язкість    c. гнучкість    d. проникність

Correct answer:    b. в'язкість.

7. In some cases, digital learning environments adapted for Moodle are used to study terms related to specific industries (for example, technical ones).

Such online environments make it possible to apply terms in practice in simulated real-world conditions. A model of a virtual practical work lesson that combines professional terminology, synonym series and practical simulation in automotive and highway construction. First, we introduce students to the topic of morphological-syntactic, spelling and syntactic synonyms within technical terminology. We teach them to recognize variants of terms in a professional environment (standards, building codes, schemes, drawings, patents, directories, construction projects).

The task is to recognize synonyms in the proposed simulation option. If the student clicks on the position "oblique wing", an explanation opens – "this element can also be called "oblique wall". It is necessary to choose the term recommended in the regulatory documentation.

8. The use of crowdsourcing platforms allows students and professionals in various fields to jointly create terminological bases, which allows them to attract rich experience to form accurate definitions and

translations of terms. A team term base has been formed with the ability to sort and search for terms by thematic groups, where all participants can view and even comment on the proposed lexemes.

Thus, the "Glossary" module was used to form a terminological base of highway terms, which allowed creating a team of participants who actively cooperate in the development of terminology and the creation of a dictionary in the learning process. The specified module in the course reflects the national spirit of Ukrainian terminology in the conditions of modern transnational challenges, because the task of students is to form a terminological base, after the terms of foreign origin previously created by the teacher, to supplement this list, offering their own versions of translations, synonyms or explanations. The platform acts as a source of creation and replenishment of dictionaries of autochthonous highway construction and automobile terms.

9. Lectures were held both in real time and asynchronously, when during lecture classes students act as passive listeners, which, in our opinion, sometimes negatively affects their dynamic activity in the digital learning environment. The use of video lessons and online lectures allows you to convey information to students in various formats: video, text, audio. However, such training is extremely relevant in the mode of modern blackouts in Ukraine

In particular, videos can include animations, highway structure modeling, design studies, and analysis of practical cases.

We actively use test tasks in each practical lesson, taking into account the specialization of applicants and the capabilities of Moodle. If the results of test tasks are configured taking into account adaptive learning technologies to individualize the process, the system offers the most necessary terms or specific topics for study for each student [9 Knysh Programs].

Teaching experience has shown that the introduction of information and communication technologies into practical lessons on terminology studies, as well as into the process of independent and research activities of student motorists and highway workers, is an effective tool for improving traditional methodological approaches.

### **3.5 DISCUSSION OF THE RESULTS OF SECTION 3**

The conducted study shows that the formation of the professional terminological competence of students at Ukrainian higher education institutions is an important aspect of the modern educational process, especially in the context of education digital transformation. The analysis of methodological approaches to determining the essence of professional terminological competence allowed us to clarify its structural components and functional aspects, which ensure the effective training of specialists in various specialties.

Highlighting the relevance of the digital transformation of higher education emphasized that the integration of digital technologies into the educational process not only expands access to knowledge, but also creates conditions for a more dynamic assimilation of professional terminology and the development of students' communicative competencies. Methodological approaches to the formation of professional terminological competence in a digital educational environment prove the need to use modern learning tools,

such as interactive platforms (Moodle, Google Classroom), multimedia resources and adaptive distance learning systems, which allows taking into account the individual characteristics of students and ensures a high level of assimilation of educational material.

Practical recommendations developed for students of highway construction specialties have proven themselves well during the systematic mastery of industry vocabulary. This contributed to improving the performance indicators of a competent specialist who is ready to work in the conditions of the modern labor market.

Thus, a comprehensive combination of methodological, methodical and practical approaches ensures the holistic formation of students' professional terminological competence, which meets the requirements of the digital transformation of higher education in Ukraine and takes into account the challenges of the functioning of the education system in war conditions, contributing to the training of highly qualified and competitive specialists.

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## 4

**DEVELOPMENT OF COMMUNICATIVE SOFT SKILLS UNDER CONDITIONS OF EDUCATION DIGITAL TRANSFORMATION**

Zhanna Bogdan, Lina Perehygina, Nataliia Miniailo, Nadiia Morhunova, Iryna Shulgo

**ABSTRACT**

The digital transformation of education emphasizes the importance of developing communication skills among students of higher education institutions to ensure effective interaction in technologically mediated contexts. The growing importance of online communication, the volume of information and changes in models of social interaction create new requirements for emotional regulation, social perception, reflexivity and maintaining a constructive style of interaction in the digital environment. In this context, the development of communicative soft skills is especially important to ensure flexibility of behavior, responsibility for one's own communicative decisions and readiness to adapt to dynamic formats of cooperation.

The study presents an approach to the development of the communicative competence of applicants based on a combination of emotional-reflective mechanisms and modern educational technologies. Empirical results showed a positive dynamics in terms of emotional intelligence and communicative reflection, which indicates the formation of a more conscious and adaptive style of digital interaction. The identified correlations between emotional and reflective components confirm the systemic nature of communicative development and the importance of targeted work with the indicated psychological determinants. The obtained data can be used to improve educational programs aimed at preparing future specialists for effective activity in the conditions of digital communication and multi-format interaction.

**KEYWORDS**

Soft skills; digital communication; emotional intelligence; communicative reflection; personality, social perception; self-regulation; higher education students.

**4.1 COMMUNICATIVE SOFT SKILLS AS A COMPONENT OF PROFESSIONAL COMPETENCE UNDER CONDITIONS OF EDUCATION DIGITALIZATION**

The rapid development of digital technologies has reformatted the way the educational process is organized much more deeply than the previous stages of modernization. If earlier innovations concerned mainly the content of education, today the very logic of interaction between participants in the educational environment is changing. Universities are increasingly working in the format of distance or blended learning, using multimedia resources, interactive platforms and mobile services. As a result, students find themselves in an environment where communication becomes more fragmented, flexible, and its speed and tools determine the quality of educational activities.

As modern research shows, the introduction of distance learning formats affects not only the assimilation of content, but also how students' communicative and information skills are formed [1]. In the conditions of digital channels of interaction, the burden on self-regulation and the ability to structure information, maintain productive contact and quickly adapt to changes in the format of communication is increasing. The fact that digital interaction is constantly moving between formal and informal planes places new demands on students. They need not only to understand the content of the educational material, but also to be able to briefly, reasoned and correctly express their position, negotiate, overcome misunderstandings, work in online teams. This is confirmed by the results of research on the development of soft skills in blended learning, which demonstrate a noticeable increase in the role of communicative competencies [2].

Therefore, the education digital transformation significantly changes the idea of modern professional training. It is not limited to updating tools or training platforms, but also affects the very content of competencies that are important for a specialist today. Communicative skills occupy a central place among them, as they determine the ability of a future specialist to act effectively in conditions of information overload, hybrid work formats and rapid changes in technological environments.

One of the key elements is social intelligence, which determines the quality of interpreting the intentions, emotions and reactions of other people. Its importance increases in the conditions of digital interaction, where some non-verbal signals disappear, and the risk of misunderstandings increases [4]. Social intelligence helps to navigate multitasking and rapidly changing conditions of the communicative space. An equally important component is communicative creativity. It involves the ability to find new ways of expressing thoughts and building a dialogue, which becomes especially important in situations where standard interaction scenarios do not work. Creativity in communication is associated with flexibility of thinking, the ability to combine different styles and techniques, as well as the ability to find constructive solutions in conflict or uncertain situations. The third important component is emotional stability, which determines the ability to maintain constructiveness in situations of excessive information overload, rapid changes or interpersonal tension. Research in the field of digital learning shows that emotional resilience is one of the factors that determine the level of inclusion and effectiveness of students' interaction in the online environment [5]. These and other components together form the foundation of communicative competence, which is a necessary condition for successful professional activity in an information-rich environment.

The coordinated development of these components significantly increases a person's ability to communicate effectively, contributes to the formation of professional flexibility and strengthens the competitive advantages of a specialist [6]. In this sense, communicative soft skills are not secondary, but system-forming characteristics that determine the quality of professional interaction in the digital era.

In the modern digital society, communicative competence is increasingly defined as one of the leading characteristics of professional maturity. If earlier the ability to communicate effectively was considered a valuable but optional skill, today it is becoming a key indicator of a specialist's readiness to work in a dynamic, technological environment. This is because digital interaction formats are changing the structure of work processes: work in teams becomes more distributed, and decisions are often made in conditions of incomplete information or rapidly changing circumstances.

Research in the field of digital education confirms that the communicative competence level of students directly affects the ability to act in virtual team configurations, coordinate activities and maintain productive information exchange [7]. In hybrid teams, skills related to setting up communication channels, maintaining emotional connection with colleagues and forming a transparent communicative climate are especially valued, regardless of whether the interaction takes place in physical or digital space.

In this context, employers emphasize the growing importance of the ability to work in a team, resolve conflicts, argue a position and coordinate the interests of different parties. Studies of various models of hybrid employment demonstrate that it is communicative skills that ensure the coherence of actions in the team and contribute to the formation of sustainable work dynamics [8]. Where there is no clear emotional feedback, which is usually provided by offline interaction, empathy, attention to the context and the ability to predict possible reactions of the interlocutor become especially important.

From a psychological point of view, communicative competence encompasses aspects such as the ability to empathize, active listening, role flexibility, and effective self-presentation [9]. These qualities provide the opportunity to establish a positive psychological climate in the team, contribute to the emergence of trust, and reduce the risk of conflicts. Stress tolerance deserves special attention, which significantly affects the quality of communication in conditions of increased information load. Research in the field of communication management shows that the ability to maintain clarity of thought, keep an optimal level of emotional tone, and avoid impulsive decisions is an important component of professional competence in highly dynamic work environments [10].

Thus, communicative competence can be considered as an integrative formation that combines cognitive, emotional and behavioral resources of the individual. It ensures not only the effectiveness of professional activity, but also the ability to form constructive relationships, maintain psychological balance and act responsibly in the conditions of digital transformations.

The active introduction of digital technologies into the higher education system is radically changing not only the organizational forms of learning, but also the very nature of communication between its participants. The educational process increasingly combines synchronous and asynchronous formats, multimedia resources, online platforms for collaboration and feedback services. As a result, students and teachers find themselves in an environment where communication channels are branching out, and interaction requires a new culture of using digital tools.

As evidenced by modern research, online learning creates not only new opportunities, but also a number of challenges associated with increased cognitive load, fragmentation of attention, and a decrease in the number of nonverbal signals that provide emotional information in ordinary communication [11]. In such conditions, the risk of communicative misunderstandings increases significantly, since the digital environment often does not allow for a quick response to nonverbal changes or intonation nuances that are natural in face-to-face communication.

At the same time, digitalization opens up broad prospects for the development of communicative soft skills. Interactive platforms allow organizing work in groups even in the absence of physical presence; asynchronous channels (forum, chat, video messages) form new models of exchanging ideas; multimodal materials expand the possibilities of self-expression; rapid feedback tools help coordinate joint actions more

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quickly. Thus, digital technologies not only complicate communication, but also create an environment that stimulates the development of flexibility, responsibility, the ability to plan interaction and solve problems in conditions of information uncertainty.

An important aspect is also psychological stability in distance interaction. Research in the field of psychological and pedagogical support of distance learning emphasizes the need to form emotional self-regulation skills, awareness of one's own communicative limits, and the ability to maintain motivation in remoteness conditions [12]. Maintaining psychological balance helps reduce conflict, improves the quality of interaction and makes communication processes more predictable.

Equally important is the issue of adapting the content of educational programs to new realities. The formation of communicative competence in a distance environment requires focused work on developing the ability to clearly formulate questions, convey content, argue a position and adhere to ethical norms of digital communication [13]. All this reinforces the need to revise methodological approaches and actualizes the task of integrating digital communicative practices into the curricula of higher education institutions.

The training of higher education students in the context of digitalization is increasingly focused on the formation of not only narrow professional knowledge, but also broader competencies that ensure success in various socio-professional situations. In this context, communicative soft skills occupy a special place, since they determine the ability of a future specialist to interact with others, adapt to environmental changes and solve problems that go beyond purely technical or special skills.

The results of numerous studies confirm that it is communicative skills that affect the level of academic and professional success of students, the formation of professional identity and the ability to effectively cooperate in communicatively complex conditions [14]. In situations where interaction occurs mainly through digital channels, the need for the ability to accurately convey content, correctly interpret the interlocutor's answers, as well as maintain communicative balance in conditions of a lack of non-verbal signals increases.

No less important is the aspect of graduates' competitiveness. The labor market is actively changing: more and more companies are looking for specialists who are able to work in multicultural environments, participate in project teams, negotiate, present results and justify decisions. Research in the field of professional training indicates that the presence of developed soft skills significantly increases the success of young specialists in adapting to the requirements of the modern economy and contributes to faster professional growth [15].

Modern research proves that a high level of communication skills is associated with the ability to effectively resolve conflict situations, carry out self-presentation, build constructive relationships and make agreed decisions. All these aspects become critically important in the context of digital transformation, where communication increasingly takes place in a virtual format, and the requirements for the speed and accuracy of information exchange are increasing.

Thus, the development of communicative soft skills in the higher education system is becoming a strategic task. It is not just about improving individual skills, but about the formation of holistic competence that helps students navigate in a complex digital environment, build constructive relationships and adequately respond to professional challenges. In the future, it is these qualities that ensure the readiness

of young specialists to act responsibly, predictably and effectively in conditions of rapid technological and social transformations.

## **4.2 PSYCHOLOGICAL MECHANISMS AND DETERMINANTS OF THE DEVELOPMENT OF COMMUNICATION SKILLS IN THE DIGITAL EDUCATIONAL ENVIRONMENT**

The digital educational environment, which today encompasses both academic and professional training of higher education students, significantly changes the conditions for the formation of communication skills. Unlike traditional classroom formats, where interpersonal interaction was based on a complex of non-verbal signals, intonations, spatial behavior and dynamics of group contact, digital interaction mainly focuses on textual, audiovisual and multimodal channels. This causes a restructuring of the psychological mechanisms that ensure the formation and implementation of communicative competence.

One of the key mechanisms is social perception, which provides the ability to interpret the intentions, emotions and reactions of another person. In the digital format, this ability is subject to certain limitations, since the number of non-verbal signals that usually help in understanding another person is significantly reduced. That is why the role of cognitive processes in virtual interaction is enhanced: it is necessary to analyze the context more carefully, make assumptions about the motives of the communication partner, and assess possible risks of misunderstanding. Research emphasizes that in such conditions the importance of certain aspects of social perception increases, including the ability to read indirect signals and interpret them in situations of limited non-verbal information [16].

The second important psychological mechanism is emotional regulation, which in digital interaction acquires new semantic nuances. The features of online interaction create situations, in which the usual methods of emotional support and social feedback are significantly limited. When communication occurs through screens, participants are deprived of a significant part of non-verbal signals that usually help to navigate the emotional state of the interlocutor. This can lead to difficulties in maintaining internal balance, increased sensitivity to delays in response, ambiguous formulations or information overload. In such conditions, the ability to be aware of one's own emotional reactions, to correct them in a timely manner and to maintain the constructiveness of interaction even when the communicative situation is uncertain becomes of particular importance. Studies devoted to the impact of digital communication on emotional processes emphasize: the effectiveness of online interaction largely depends on a person's ability to maintain emotional stability and flexibly adapt to changes in the dynamics of communication [17].

The third core of psychological mechanisms is communicative reflection, which acts as the ability to analyze one's own interaction models, evaluate their effectiveness, and rethink ways of influencing the interlocutor. In the digital environment, this ability acquires particular importance, since online communication is often characterized by fragmentation, rapid changes in context, and ambiguity of feedback. Under such conditions, reflection helps participants in interaction not only to better understand their own communicative reactions, but also to consciously adjust behavior, choose more appropriate forms of expression, and maintain a constructive nature of dialogue. Studies devoted to the role of reflective practices in digital

education emphasize that it is the ability to critically analyze one's own interaction that contributes to the formation of mature communicative models and better adaptation to technologically mediated communication formats [18].

The fourth group of mechanisms are motivational determinants that regulate the readiness of the applicant to engage in communicative activity. In the digital environment, motivation is often formed due to internal mechanisms, in particular self-organization, responsibility for the result and awareness of one's own educational and professional goals. When interaction is carried out mainly online and is not accompanied by constant external support, it is internal motivation that becomes a source of sustainable involvement and readiness to maintain a productive dialogue. For the development of communicative soft skills, it is important that the student not only master techniques or behavioral models, but also understand why he/she needs them and how they affect his/her professional future. Research in the field of emotional and motivational mechanisms for the development of soft skills emphasizes that internal interest, formed value orientations and a sense of personal significance of learning are among the key conditions for the growth of applicants' communicative competence [19].

The dynamics of the development of communicative skills in the digital environment also depends on the extent, to which the individual is able to integrate the acquired experience into his/her own system of meanings and value orientations. After all, digital interaction involves not only a technological environment, but also a space, in which students learn to build professional roles, maintain academic initiative and choose effective interaction strategies. That is why the key factor is the ability to consciously combine cognitive, emotional and behavioral components of the communicative process. The integration of these mechanisms forms stable communicative patterns that can be reproduced in various educational and professional situations, in particular in conditions of rapid technological change.

It is also important to consider that the digital environment not only creates new challenges, but also opens up additional opportunities for the development of communicative competence. Interactive tools, multimodal interaction formats and the possibility of asynchronous messaging expand the space for reflection, self-expression and experimentation with ways of presenting one's own position. For many higher education students, online formats are becoming the environment where they can more safely try out new behavior patterns, train their ability to argue, listen, and clarify their partner's message. In this sense, digital communication acts not only as a context that complicates the learning process, but also as a resource that enhances the ability of future professionals to adapt to multi-level and technologically saturated professional realities.

Summarizing the above, it can be stated that the digital educational environment significantly transforms the conditions, in which the communicative skills of higher education students are formed. The transition to textual, audiovisual and multimodal formats of interaction changes not only the method of information transmission, but also the very structure of psychological processes that ensure effective communication. Social perception, emotional regulation, communicative reflection and motivational determinants form an interconnected system of mechanisms that determine the quality and effectiveness of interaction in conditions of digital limitations and opportunities.

Each of these mechanisms performs its own function: social perception helps to compensate for the lack of non-verbal signals; emotional regulation supports internal stability in fragmentary and often

ambiguous communicative situations; reflection provides rethinking and correction of one's own communicative actions; motivation forms readiness for active and responsible interaction. Together, they create the basis for the formation of mature communicative competence, which is a necessary condition for the success of a future specialist in an information-rich, technologically mediated educational environment.

Taking into account these mechanisms allows not only to understand the nature of digital communication more deeply, but also to form programs for the development of communicative soft skills that meet modern challenges and real needs of students. The logic of digital interaction involves the use of such educational solutions that do not simply transmit information, but create conditions for active training of social perception, emotional regulation, reflective skills and internal motivation. That is why the following presentation focuses on presenting a comprehensive program for the development of communicative soft skills in a digital educational environment.

### **4.3 PROGRAM FOR THE DEVELOPMENT OF COMMUNICATIVE SOFT SKILLS IN THE DIGITAL EDUCATIONAL ENVIRONMENT**

The development of a program for the development of communicative soft skills is based on a combination of classical psychological principles and modern approaches focused on the specifics of digital interaction. Communication in an educational environment is considered not only as an exchange of information, but as a multidimensional process of social interaction, in which cognitive, emotional and motivational mechanisms are activated. Therefore, the conceptual basis of the program includes the provisions of the social-cognitive approach (A. Bandura, S. Asch, D. Kahneman, A. Tversky, W. Mischel) humanistic psychology (C. Rogers, A. Maslow, R. May, V. Panok, T. Yatsenko), activity theory (G. Kostyuk, V. Roments) and modern models of digital communicative behavior (J. Walther, S. Turkle, B. Wellman, N. Carr).

One of the key theoretical pillars is the social-cognitive approach, according to which communicative skills are formed through the interaction of cognitive processes, social context and experience of interpersonal behavior [20]. In the digital environment, this interaction acquires new characteristics: students are forced to adapt to the fragmentation of information flows, multi-channel interaction and the indirectness of social signals. An important conceptual component is the position of humanistic psychology, which emphasizes the ability of the individual to self-development, reflection and conscious interaction with other people [21]. This approach emphasizes the importance of developing empathy, openness, subjectivity and responsibility for the quality of one's own communication. The activity approach is also of conceptual importance, according to which any skill is formed through dynamic participation in activities, gradual complication of tasks and reflection on the experience gained [22]. Modern approaches to the study of digital communication emphasize that the effectiveness of interaction is determined not only by speech and social skills, but also by the ability to manage one's own emotional response, optimally use the capabilities of digital platforms, and maintain motivational engagement [23]. These aspects are directly related to the psychological mechanisms outlined in the previous section: social perception, emotional regulation, communicative reflection, and motivational determinants of interaction.

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Thus, the conceptual framework of the program combines fundamental psychological theories and innovative approaches to supporting communicative development in digital education. This allows students to form a holistic set of competencies adapted to the modern requirements of the professional environment and the peculiarities of interaction in the digital age.

The program for the development of communicative soft skills in a digital educational environment is aimed at forming in higher education students a holistic complex of communicative competencies necessary for effective interaction in modern conditions of technologically mediated communication. The structure of the program is built on the principle of consistent deployment of psychological mechanisms of communicative interaction, which is reflected in four content modules. Each module focuses on a certain component of communicative competence, while providing the opportunity to integrate the acquired skills into more complex forms of digital interaction.

The first module is aimed at the development of social perception in a digital environment. Its content concerns understanding the specifics of online communication, in particular, the limitations of the non-verbal channel, the ambiguity of text messages and the peculiarities of interpreting visual-multimodal signals. The module forms the ability to assess the communicative situation, analyze the intentions of the interlocutor and foresee possible risks of misunderstanding. The module uses tasks that simulate typical situations of digital interaction: analysis of fragments of online dialogues with different variants of intonation and semantic coloring; comparison of alternative interpretations of the same message; identification of hidden emotional or behavioral intentions based on limited verbal and visual signs; reconstruction of the communicative context based on incomplete information.

The second module is devoted to emotional regulation and resilience in digital formats of interaction. It reveals the peculiarities of the emergence of emotional reactions in conditions of asynchrony, fragmentation and information overload. The central task is to form the ability to maintain emotional balance, manage tension, adapt to uncertainty and keep communication productivity regardless of the context of digital exchange. In view of this, tasks aimed at awareness and correction of emotional reactions in a digital context are integrated into the content of the module. In particular, students work with examples of online communications, in which ambiguity or delay in response is intentionally modeled, analyze their own first emotional impulses and carry out their cognitive reassessment. The module also includes exercises on identifying "triggers" of digital stress, building individual maps of emotional response, identifying moments of information overload and finding alternative self-regulation strategies. Additionally, the technique of reconstructing the emotional tone of online dialogue using a minimum of verbal and non-verbal markers is used, which allows developing sensitivity to the hidden emotional dynamics of digital interactions.

The third module focuses on the development of communicative reflection as a tool for self-correction and conscious interaction. Within this block, students analyze their own communicative strategies, identify typical response patterns, track difficulties and strengths in various formats of digital communication. Reflective practices contribute to rethinking routine behaviors, forming alternative solutions, and increasing personal flexibility in communicative situations. In particular, students work with the reconstruction of their own typical behavioral strategies in digital dialogues, compare expected and actual interaction results, and form individual profiles of communicative reactions. The modular complex includes tasks for describing

situational experiences, within which participants analyze the causes of misunderstandings in virtual communities, determine the stages of the emergence of communication barriers, and model alternative ways of responding.

The fourth module integrates the results of the previous blocks and is aimed at developing practical digital communication skills relevant to professional interaction. The focus is on the ability to build reasoned messages, present information in a multimodal format, work effectively in digital teams, engage in ethical and constructive interaction, provide and receive feedback. The module involves working with complex communication scenarios that require rapid adaptation, coordination of actions, and a responsible attitude to digital behavior. Of particular importance is the implementation of teamwork simulations in digital environments, where participants play the roles of moderators, analysts, or decision generators, coordinating actions in real time. Such exercises allow you to practice the ability to quickly adapt a communication strategy, maintain transparency of the discussion, and ensure effective distribution of responsibility in the team. The final element of the module is a feedback exercise, where students analyze the strengths and problems of interaction, carry out self- and mutual evaluation of communicative actions, which strengthens the skills of constructive assessment and increases reflective accuracy. The combination of these tasks contributes to the formation of sustainable digital communicative competencies that ensure the effectiveness of professional activity in the conditions of increasing digitalization.

To summarize the logic of the program implementation and systematize its key components, the content of each module was structured according to the leading psychological mechanisms relevant to digital interaction. **Table 4.1** summarizes the structure of the program for the development of communicative soft skills in the digital educational environment.

● **Table 4.1** Program for the development of communicative soft skills in the digital educational environment

Module	Content focus	Key technological elements (exercises, techniques)
Social perception	Understanding the features of digital communication, interpreting multimodal signals	Analysis of fragments of online dialogues; comparison of different interpretations of one message; identification of hidden intentions based on a minimum of signals; reconstruction of the context with incomplete information
Emotional regulation	Managing emotional states in the context of online interaction and information overload	Analysis of emotional impulses and cognitive reappraisal; identification of individual "triggers" of digital stress; construction of a map of emotional reactions; reconstruction of the emotional tone of the dialogue based on a minimum of markers
Communicative reflection	Awareness and analysis of individual digital communication strategies	Reconstruction of typical strategies of digital interaction; comparison of expected and real results; creation of individual profiles of communicative reactions; reflexive commenting on fragments of one's own online communication
Practical digital communication	Developing professionally oriented digital interaction skills	Construction of reasoned digital messages; multimedia presentations; simulations of teamwork; analysis of violations of digital etiquette; reflexive feedback

The generalized structure of the program demonstrates the correspondence between the psychological mechanisms of communicative interaction and the tools of their targeted development. The presented modules contain basic methods and exercises that ensure the gradual complication of communicative tasks and the formation of skills relevant to the digital educational environment.

#### **4.4 EMPIRICAL VERIFICATION OF THE EFFECTIVENESS OF THE PROGRAM FOR THE DEVELOPMENT OF COMMUNICATIVE SKILLS OF HIGHER EDUCATION STUDENTS IN THE DIGITAL EDUCATIONAL ENVIRONMENT**

The empirical verification of the effectiveness of the program was carried out through the analysis of the development dynamics of communicative skills under the influence of the implemented intervention. The study included two main stages: preliminary diagnostics, program implementation and re-measurement with subsequent comparison of the results obtained. This approach made it possible to determine what changes are associated with the use of the program, as well as to assess the degree of its impact on key psychological mechanisms of communication.

The empirical study was conducted during the 2024–2025 academic year on the basis of the educational laboratory of mental health, mentoring and mediation of the Semyon Kuznets Kharkiv National Economic University. The sample included 102 higher education applicants of 2–3 years of various educational programs. The age range of the participants was 18–21 years, which made it possible to obtain data representative for the analysis of the features of the emotional experience of student youth.

For empirical verification of the effectiveness of the program, a set of psychodiagnostic methods was used, covering key psychological mechanisms related to the development of communicative soft skills in the digital educational environment. The selection of methods was carried out in accordance with the psychological mechanisms defined in the theoretical model of the program.

The empirical research procedure involved the sequential implementation of three stages: preliminary diagnostics, implementation of a program for the development of communicative soft skills, and final measurement. At the first stage, students underwent a set of psychodiagnostic techniques aimed at assessing the level of emotional regulation, social perception, communicative reflection, and motivational determinants of interaction. The second stage included the systematic participation of applicants in a four-module program integrated into practical classes and extracurricular forms of work, which ensured the reproduction of real conditions of digital communication. The final stage involved the repeated application of the same set of techniques, which made it possible to trace the individual and group dynamics of indicators, determine the effectiveness of the program, and assess the changes caused by the influence of the targeted development of psychological mechanisms of communicative interaction in the digital environment.

For a comprehensive assessment of the emotional component of the communicative competence of applicants, N. Hall's method was used, which allows determining the development level of key aspects of emotional intelligence: emotional awareness, emotion management, self-motivation, empathy and the ability to recognize emotional signals of other people. Since it is these determinants that largely ensure the

effectiveness of digital interaction, their dynamics are an important indicator of the effectiveness of the program for the communicative soft skills development. The generalized results of measurements for all five scales and the integral indicator of emotional intelligence are given in **Table 4.2**.

● **Table 4.2** Dynamics of emotional intelligence indicators (N. Hall) before and after the program

Emotional intelligence scales	Before the program (M ± SD)	After the program (M ± SD)	Statistical significance
Emotional awareness	9.8 ± 4.1	12.6 ± 3.9	$p \leq 0.05$
Emotional management	8.7 ± 3.8	10.1 ± 3.5	$p \geq 0.05$
Self-motivation	10.9 ± 4.0	13.4 ± 3.7	$p \leq 0.05$
Empathy	11.2 ± 3.9	14.1 ± 3.6	$p \leq 0.01$
Recognition of other people's emotions	10.4 ± 4.2	11.3 ± 4.0	$p \geq 0.05$
Integral level of emotional intelligence	51.0 ± 10.3	61.5 ± 9.8	$p \leq 0.01$

The results presented in **Table 4.2** demonstrate the positive dynamics of the development of individual components of the emotional intelligence of applicants after the program implementation. The most pronounced changes are observed in the scales of emotional awareness ( $p \leq 0.05$ ), self-motivation ( $p \leq 0.05$ ) and empathy ( $p \leq 0.01$ ), which corresponds to the theoretically outlined tasks of forming emotional stability, sensitivity to the states of other people and the ability to volitional regulation in the digital environment. The deepening of these characteristics is natural, since they form the basis of constructive behavior in conditions of information overload, fragmentation of online communication and the need for accurate understanding of communicative signals.

Indicators related to managing one's own emotions and recognizing the emotions of others demonstrate a moderate increase without statistically significant differences ( $p \geq 0.05$ ), which is typical for more stable emotional components that require longer psychological work and deeper reflective practices. At the same time, the integral level of emotional intelligence has a statistically significant increase ( $p \leq 0.01$ ), which indicates a general strengthening of the emotional competence of applicants and confirms the effectiveness of the program in forming those determinants that ensure the success of communication in the digital educational environment.

To assess the level of applicants' awareness in the process of interpersonal and digital interaction, a questionnaire of communicative reflection (author's modification) was used, aimed at measuring the cognitive, emotional and behavioral components of reflective activity. The methodology allows you to determine the extent, to which a person is able to analyze own communicative actions, predict their possible consequences and adjust behavior in accordance with the context of interaction. The use of the questionnaire allows you to comprehensively assess the level of conscious participation in digital communication and identify changes caused by the action of the program for the development of communicative soft skills.

To determine changes in the awareness level of communicative behavior of higher education students, indicators were analyzed for three main components of communicative reflection: cognitive, emotional

and behavioral. Since it is the development of reflective skills that provides the ability to consciously respond, correct communicative strategies and adapt in the digital environment, the dynamics of these indicators is an important criterion for the effectiveness of the program. The summarized results are presented in **Table 4.3**.

● **Table 4.3** Dynamics of communicative reflection indicators before and after the program

Communicative reflection components	Before the program (M ± SD)	After the program (M ± SD)	Statistical significance
Cognitive reflection	14.2 ± 3.8	17.6 ± 3.5	$p \leq 0.05$
Emotional reflection	13.5 ± 4.0	16.9 ± 3.7	$p \leq 0.01$
Behavioral reflection	15.1 ± 3.6	16.3 ± 3.4	$p \geq 0.05$
Integral indicator of communication reflection	42.8 ± 8.2	50.8 ± 7.9	$p \leq 0.05$

The results presented in **Table 4.3** indicate a positive development dynamics of applicants' communicative reflection after the program implementation. The most significant changes were recorded in the indicators of emotional reflection ( $p \leq 0.01$ ), which indicates an increase in the ability to be aware of one's own emotional states and their impact on the course of communication. A moderate but statistically significant increase is also observed in the cognitive component of reflection ( $p \leq 0.05$ ), which reflects an improvement in applicants' ability to analyze their own communicative actions, interpret their causes and predict possible consequences. The indicator of behavioral reflection demonstrates a tendency to increase, but these changes do not reach statistical significance ( $p \geq 0.05$ ), which is characteristic of more stable behavioral patterns that require longer interventions for significant modification. At the same time, the integral indicator of communicative reflection significantly increased ( $p \leq 0.05$ ), which confirms the general strengthening of reflective competence and indicates the effectiveness of the program in forming conscious communicative behavior in the digital educational environment conditions.

For an in-depth study of the structure of the relationships between the components of emotional intelligence and communicative reflection, a correlation analysis was conducted, which made it possible to determine how coherently individual psychological mechanisms involved in digital communication develop. This allowed not only to confirm the effectiveness of the program at the level of individual indicators, but also to identify integral processes of their mutual reinforcement, which is important for understanding the complex nature of the communicative soft skills formation.

The correlation analysis confirmed the presence of systemic relationships between the components of emotional intelligence and communicative reflection. The strongest relationship was found between emotional awareness and emotional reflection ( $r = 0.46$ ,  $p \leq 0.01$ ), which indicates a consistent development of the ability to be aware of one's own emotional states and analyze their impact on communication. Significant relationships are also observed between self-motivation and cognitive reflection ( $r = 0.50$ ,  $p \leq 0.01$ ), which reveals the mutual reinforcement of volitional control of emotions and the analytical ability to evaluate one's own communicative actions. Empathy indicators have a positive relationship with emotional reflection ( $r = 0.50$ ,  $p \leq 0.01$ ), which emphasizes the importance of emotional sensitivity in the

process of reflective analysis of interaction. At the same time, the components of behavioral reflection form weaker, but correlations with the motivational and cognitive aspects of emotional intelligence ( $r = 0.28-0.37$ ,  $p \leq 0.05$ ) are significant, which corresponds to their greater stability and slower dynamics of change. The results obtained confirm that the development of emotional intelligence and reflective competence has an integrated nature and occurs as a cumulative reinforcement of interconnected psychological mechanisms.

The empirical data obtained allow a comprehensive assessment of the effectiveness of the program for the development of communicative soft skills in the digital educational environment and to trace its impact on the key psychological determinants of interaction. The analysis of the results according to the method of N. Hall showed a statistically significant increase in the indicators of emotional awareness, self-motivation and empathy, which indicates the formation of higher education students with greater emotional stability, the ability to more accurately identify emotional signals and more actively engage in emotional regulation in the conditions of digital communication. The data from the questionnaire on communicative reflection also showed an increase in the level of cognitive and emotional components of reflexivity, which is manifested in increased awareness of one's own communicative actions, the ability to predict their consequences and adjust behavior in accordance with situational requirements.

The correlation analysis conducted confirmed the interconnected nature of the studied components development. The identified connections between emotional awareness and emotional reflection, between self-motivation and cognitive reflection, as well as between empathy and emotional analysis of communicative situations indicate an integrated impact of the program on the holistic system of emotional-reflective support of digital interaction. At the same time, even moderate but stable correlations with behavioral aspects of reflection indicate the gradual formation of applicants' ability to adapt their own communicative patterns to the conditions of online interaction, which is important for modern professional activity.

Thus, the results of the study demonstrate that the proposed program contributes to the development of not only individual communicative skills, but also deeper psychological mechanisms that ensure the effectiveness of digital communication: emotional regulation, reflexivity, social sensitivity and motivational activity. The totality of the data obtained gives grounds to consider the program as a tool of comprehensive influence, capable of strengthening the adaptive resources of applicants and forming in them a stable readiness for effective interaction under conditions of education digital transformation.

#### **4.5 DISCUSSION OF THE RESULTS OF SECTION 4**

The obtained results allow us to take a different look at the development dynamics of communicative soft skills of students in the digital educational environment. First of all, it is worth noting that the growth of individual components of emotional intelligence (emotional awareness, self-motivation and empathy) is not a random or fragmentary phenomenon. On the contrary, their changes demonstrate an internal logic that fully corresponds to the psychological picture that was outlined in the theoretical section. Digital communication, which deprives participants of a significant part of non-verbal signals, places increased demands on the ability to quickly recognize emotional states and maintain internal stability. That is why the increase

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in the level of emotional awareness in the study can be considered one of the key markers of adaptation to the digital format of interaction.

Changes in the structure of communicative reflection also turned out to be indicative. The increase in the cognitive and emotional components indicates that the participants began to understand their own communicative reactions, their causes and possible consequences more deeply. This result is consistent with modern ideas about reflexivity as a mechanism of professional and personal flexibility. At the same time, the behavioral component, despite the positive dynamics, turned out to be less sensitive. This is quite natural: changing stabilized communicative patterns requires more time and practical experience than forming awareness or emotional analysis of the situation. Therefore, the obtained indicators can be considered as only recording the initial stage of deeper transformations.

Additional understanding of the relationships between these indicators was provided by conducting a correlation analysis. The identified relationships between emotional awareness and emotional reflection, between self-motivation and cognitive analysis of communicative situations confirm that emotional-reflexive mechanisms do not work in isolation. Strengthening one component strengthens the others, forming a more holistic system of communicative competence. The relationship between empathy and emotional reflection attracts special attention: it is this pair of indicators in the digital context that becomes critically important, since it allows you to compensate for the loss of some of the social signals characteristic of online interaction.

Summarizing the results presented, it can be argued that the study outlined a holistic picture of the communicative soft skills development in the digital environment and identified the leading mechanisms that ensure this dynamic. The changes recorded in emotional intelligence and communicative reflection indicate the formation of a more adaptive style of interaction among higher education students, capable of relying on internal self-regulation, attentiveness to one's own experiences and analytical understanding of the situation. In a digital educational environment, where the intensity of communicative processes is constantly increasing, and the requirements for emotional and social competence are becoming higher and higher, such changes are of fundamental importance.

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## SOCIAL INTELLIGENCE, PERCEPTION AND SELF-PRESENTATION OF PERSONALITY IN DIGITAL COMMUNICATION

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### ABSTRACT

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The article theoretically substantiates and empirically investigates the features of social intelligence, social perception and self-presentational behavior of an individual in digital communications. It is determined that social intelligence in a digitalized society functions as an integral cognitive-emotional system that provides understanding of social situations, interpretation of online signals and symbols, regulation of interpersonal interaction and maintenance of authenticity in virtual space. The mechanisms of social perception of online communication are analyzed, in particular the influence of the limitations of non-verbal signals and specific effects on the accuracy of perception of communication partners. The psychological features of digital self-presentation are highlighted, its connection with self-monitoring, identity and psychological well-being of the individual.

Empirical research revealed correlations between the level of social intelligence, reflection, empathy and self-presentation strategies of young people in digital interaction. The structural modeling method allowed us to determine the cause-and-effect relationships between the studied constructs and build a hierarchy of their influences. The results obtained expand modern ideas about the social and psychological factors of online communication and outline the prospects for the development of competencies necessary for constructive interaction in the digital environment.

### KEYWORDS

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Social intelligence, social perception, self-presentation, digital communication, reflection, empathy, identity.

### 5.1 THE ROLE OF SOCIAL INTELLIGENCE IN DIGITAL COMMUNICATION

Due to changes in the social, economic and political situation in the world, interpersonal communications are increasingly carried out mainly in digital format. One of the current areas of modern research is determining the impact of digital communications on a person's social intelligence. The decrease in the quality of direct communication, the decrease in the number of "live" contacts, the digitalization of interaction are of concern. At the same time, the digital environment provides new opportunities for communication, maintaining relationships at a distance, expanding the circle of communication, meeting representatives of a different socio-cultural environment, etc.

The concept of "social intelligence" (SI) was first introduced by E. Thorndike to define the ability to understand other people and interact constructively with them. The further transformation of the concept

moved from defining SI as a set of human knowledge about the social world to the idea of an integral ability to be successful in interactions due to social awareness and agility. To date, attempts have been made to finally operationalize the concept of SI, but there is still no unity [1].

Digital communication is characterized by the lack of direct contact between people, so many non-verbal signals remain outside the attention zone of partners, which complicates understanding each other's emotions, contextual cues, but instead provides freedom from established roles, stereotypes, prejudices and forms the ability to realize the consequences of one's own influences without the direct reaction of the interlocutor. In these conditions, components of social intelligence that adapt to online communication develop. This includes the ability to understand online social situations and respond to appropriate signals; compliance with "network etiquette", understanding the rules of behavior on different platforms and in online communities, communication ethics; balance between self-expression and compliance with the norms of online interaction; the ability to decode symbolic signals and apply them correctly, etc. [2, 3]. Research results prove that digital communication can have a positive impact on the development of a person's social skills [4, 5]. Active constructive online interaction helps meet social needs, creates a sense of support, and can have a psychotherapeutic effect, which is especially important for young people.

Digital space influences the development and manifestation of social intelligence due to the availability of unlimited access to various images, opinions, cultures, communication styles, etc. A person learns to communicate with different partners, expands communicative experience, is enriched by acquaintance with alternative points of view, masters the culture of mutual evaluation, self-presentation, reflection [6]. According to research, high SI contributes to awareness of the consequences of statements, observance of the boundary between private and public, respect for other people's opinions, provision of reliable information, transparency of intentions. Low SI is manifested in violations of the norms of online communication, vulnerability to negative influences, susceptibility to manipulation and disinformation [7]. It has also been found that users with a high level of social intelligence better maintain a balance between real and virtual life, are less prone to Internet addiction. A low level of SI is a risk factor for excessive immersion in the digital environment. This demonstrates the protective function of SI, the development of which can be a prevention of destructive addictions to online activities [8]. Scientists also determine that people with more developed SI more accurately recognize and interpret digital emotional signals, conventional symbols [9]. It has been confirmed that SI is a significant factor in the success of digital interaction, because even in anonymous communication people value empathy, goodwill, and the ability to listen without prejudice [5, 10]. Differentiation of communicative strategies depending on the level of SI has been revealed, people with a higher level of SI prefer active meaningful communication, participate in discussions, become initiators of interaction, are able to regulate it, usually do not enter into conflicts, critically evaluate information, especially before distribution, unlike users with low SI, who more often passively observe content [2, 11].

Thus, digital social intelligence is a set of knowledge, skills and abilities that allow a person to communicate effectively online, show empathy, collaborate with others, and overcome barriers to virtual communication.

Despite the large number of studies on social intelligence, there are still aspects that require further analysis, especially in the context of digital interaction. Modern definitions of SI were formulated for the offline environment, so there is an urgent need to operationalize the concept and its components. There is

a need to develop an integrated model of SI in the information society and new tools for diagnosing social intelligence that can be used in digital format. A promising direction is the involvement of artificial intelligence in research on online social interaction of large samples. The impact of digital communication on the features of SI development and the long-term consequences of digitalization for the social competence of an individual also remain unexplored.

Thus, the analysis of the phenomenon of social intelligence in the context of digital communication has shown that it remains one of the determinants of constructive and effective interaction. The digitalization of communication requires mastering digital etiquette, understanding indirect emotional signals, the simultaneous development of technical and social skills, and digital literacy. The development of SI reduces the risk of Internet addiction and destructive online behavior, helps overcome communication barriers and resolve conflicts. The need for further scientific research, the development of a modern concept of SI, the improvement of tools and methods for its assessment, and the elaboration of development programs for different categories of the population is obvious. For young people, it is advisable to implement special educational programs aimed at developing empathy, reflection, critical thinking, digital culture, and etiquette.

## **5.2 SOCIAL PERCEPTION IN DIGITAL COMMUNICATION**

The problem of social perception as the recognition, understanding and evaluation of social objects in digital communication is becoming particularly relevant in connection with the total digitalization of the world. Social perception determines how impressions about the interlocutor are formed, assessments of his/her emotions, motives, prediction of behavior, and the effectiveness of interaction. How a person perceives others depends on his/her previous experience, goals, motives, and specifics of the situation. In the process of communication, partners influence each other in order to form a positive image of themselves in the other person. Interlocutors interpret each other's behavior, personal qualities, highlight the content of communication and evaluate it. The more attractive the other person is, the greater the interest he/she arouses in the partners. That is, social perception is subordinated to current motives, attitudes, and stereotypes; it determines the selectivity of attention and the interpretation of information.

Social perception contributes to the formation of an image of an interaction partner in the mind through the perception of external signs that are compared with internal features and, thus, affect the interpretation of intentions, thoughts, emotions, etc. Interpersonal cognition occurs, the result of which is understanding another person and predicting their behavior in the future. The main mechanisms of social perception are identification (associating oneself with another), empathy (understanding the emotional state of another), reflection (awareness of another's perception), causal attribution (explanation of the reasons for another's behavior), stereotyping (classification and interpretation of another's behavior through social stereotypes). Stereotyping of perception leads to specific errors, which are called "effects of social perception". The most famous of them are the halo effect, primacy, projection, and others. The mechanisms and effects of social perception affect the accuracy, correctness, and adequacy of partners' perception.

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The transition of communication to a digital format has led to qualitative changes in people's social perception of each other. Online communication allows for more careful control of self-presentation, which leads to perceptual errors. In addition, the absence of most non-verbal signals narrows the possibilities of perception and contributes to its ambiguity and misinterpretations. This also negatively affects the coordination of the behavior of interlocutors, synchronicity in interaction. The online communicative context does not include background signals (clothing, appearance, meeting place, etc.), which can lead to simplification of the image, projections, conjectures, attributions. Researchers note that the lack of individual information makes it necessary to update social stereotypes and life experience [12]. Anonymity and lack of eye contact can increase aggression, reduce empathy and responsibility. A review of research results showed a connection between online activity and aggressive personality attitudes [13]. This indicates a greater polarization and emotional tension of social perception in digital communication. It is worrying that certain components of empathy and facial expression perception skills may not be formed due to insufficient offline practice.

Online platforms actually transfer control over the impressions on others to the user, thanks to the ability to carefully edit posts, photos, think over the response to the interlocutor, and show only the desired aspects of life. As researchers note, digital communication encourages participants to present themselves in a positive light in order to receive favorable feedback from others and increase social status [6, 14]. A study by T. Dinh and Y. Lee showed that the more often a user deals with social networks, the more likely they are to compare themselves with others and feel a fear of missing out on something important, which increases their desire to post content about themselves and demonstrate success [15]. Questions arise about the authenticity of communication partners, how much their online image is identical to the real person, how accurate is social perception. Thus, the digital format of communication significantly affects the social perception of people. The main features relate to the channels and volume of information about a person, fewer direct signals, more opportunities to control self-presentation, reduced spontaneity and synchronicity of interaction, etc. Static and visually rich online contexts have proven to be more conducive to correct social perception than dynamic and minimalist ones. Information restriction enhances the role of stereotypes and previous experience of the perceiver, which activates the categorization mechanism, when a person is assigned to a certain category based on a small fragment of information and is further interpreted through this assumption. On the other hand, when age, gender, social status, nationality are unknown, biases are not activated. The accuracy of perception in digital communications is usually quite low.

Ukrainian scientists' studies address issues of social perception in the digitalization of society. In particular, V. Volynets investigated personal identity and the specifics of its self-presentation in the virtual communicative space [14]. The author argues that in online communication, a person can either reproduce their real identity or construct an image that differs from the real one, or combine elements of both and form a hybrid identity. A. Krasniakova found in her study that about 62% of young people present their real personality online without significant changes, approximately 30% choose a hybrid model, and only 1.5% create a completely fictional image. 93% of respondents use visual symbols in social networks to express their identity (national, civic) – flag elements, national ornament, characteristic avatars, etc. [4]. This refutes the widespread stereotype that most people hide behind fictional images on the Internet.

Yu. Shpakovska and O. Vdovichenko compared data on how people present themselves online with who they really are and found that people tend to project aspects of their real selves into the virtual environment [12].

Foreign scientists are also actively investigating social perception in digital communications. For example, the experiment by V. Romero and A. Paxton confirmed that video contact, although approaching live communication, is still qualitatively different, unconscious mechanisms of behavior synchronization are disrupted by technical frameworks, which can generate the effect of "artificiality" of communication and fatigue from video conferences [8]. In the study by S. Tong and colleagues, lens analysis was applied to text profiles on dating sites to find out whether the image that a person creates in the profile coincides with how others perceive him or her and with who this person really is [16]. The results showed that some characteristics are presented in the text and recognized by users, others are not; the overall correspondence between self-presentation and perception was moderate. In the study by T. Eginli, O. Tas, it was clear that in social networks people try to satisfy certain needs, which affects both self-presentation and social perception of others [17]. That is, social perception online depends on the type of platform and communication goals.

Thus, typical effects of social perception are reproduced in digital communications, but their strength and manifestation may vary depending on the platform specifics. Users develop new ways to signal their state and understand the signals of other people online. Self-presentation largely reflects the true personality, albeit in an adjusted form. Most users demonstrate their real identity in the virtual space, supplementing it in the desired direction. The accuracy of social cognition depends on the context and time spent. The emotional component of perception is complicated by the lack of non-verbal information, which leads to the desire to express emotions in words or symbols, which may result in the development of communication reflexivity. The issues of the long-term effects of online communication on the perceptual abilities of the individual remain unresolved; cross-cultural and intergroup features of digital perception; recognition in virtual and augmented reality using avatars; ethical boundaries of self-presentation and authenticity. This list outlines the novelty and dynamism of the problem.

Thus, social perception is an important mechanism of interpersonal interaction, which is transformed in digital communications. People strive to declare themselves, get to know others and achieve mutual understanding, and digital technologies significantly affect this process.

### **5.3 PSYCHOLOGICAL ANALYSIS OF THE PHENOMENON OF INDIVIDUAL SELF-PRESENTATION IN DIGITAL COMMUNICATION**

Self-presentation in the virtual world is becoming an integral part of modern social life, affecting interpersonal relationships, professional reputation and psychological well-being of a person. The online space provides almost unlimited opportunities for self-presentation of users, allows you to construct the desired image and dynamically change it. Research into this phenomenon is important for scientists, as it allows them to understand how a person's digital identity is formed and interacts with their real image, what risks and resources are associated with existence in the online environment.

The scientific study of self-presentation began within the framework of social psychology and sociology in the mid-twentieth century. One of the founders of the theory of self-presentation is E. Hoffman, who proposed considering social interaction as a theatrical stage. That is, each person in everyday life performs certain roles, consciously or unconsciously demonstrating those aspects of his/her own personality that meet the expectations of the audience, in order to make the right impression on others, to control their perception of his/her own image. It was E. Hoffman who introduced the concept of "impression management" to emphasize that people make efforts to form the perception of others about themselves [18].

Researchers note that online communication has significantly expanded the possibilities of self-presentation, allowing users to select, edit and monitor the content they show to others at their discretion [4, 6]. The concept of "managed identity" has come into use, which means the conscious construction of one's image in digital networks.

Studies of the problem of self-presentation in the digital environment take into account M. Snyder's concept of self-monitoring as an individual ability to regulate behavior in accordance with social requirements. In the context of research on flexible personality skills, Zh. Bohdan notes that people with high self-monitoring are more pragmatic and adaptive in self-presentation – they adjust their image to the situation; on the other hand, individuals with low self-monitoring tend to be principled and constant, trying to remain themselves under any circumstances [18]. Many modern researchers consider effective self-presentation as a flexible social skill that can be trained and developed. At the same time, they warn that too strategic, manipulative self-presentation can harm the authenticity of relationships with other people. Therefore, the current issue remains the search for a balance between strategic goals and identity. It has been found that people with a complex, multifaceted identity are able to present themselves more flexibly depending on the situation and not experience internal discomfort. In contrast, individuals with less complex identities may experience more acutely the discrepancy between their online image and their real self [14].

Online self-presentation depends on the technological capabilities and skills of the person, platform settings, level of privacy, availability of moderation, the ability to make anonymous comments, etc. Digital space facilitates the provision of selective information about oneself in order to hide undesirable features or facts and emphasize desirable aspects, thanks to pre-prepared texts, edited photos, controlled public posts, etc. V. Volynets believes that the anonymity of communication in virtual space leads to "social disinhibition", a decrease in moral barriers, due to which interaction sometimes takes on forms that are impossible offline [14].

The style of self-presentation is also influenced by personal and situational regulatory factors. Personal factors include the level of social and emotional intelligence, self-monitoring, which contribute to the fact that a person intuitively feels what image is appropriate in a certain situation. Situational factors include the characteristics of the environment and community. In particular, online communities consisting of strangers provoke exaggeration of one's own successes and achievements, other status symbols in self-presentation. Thus, digital self-presentation is characterized by controllability of one's own image, multiplicity of images, instant feedback, publicity of personal space, etc. All this creates new challenges for users in terms of maintaining authenticity and psychological comfort, satisfying the need for self-expression.

The problem of the relationship between online self-presentation and personal identity is important for understanding the consequences of the society digitalization. In the digital world, a person can construct

him/herself both internally and externally – through content that is available to a potentially unlimited number of people. Studies show that the creation of a virtual image is often determined by dissatisfaction with one's own personality [6, 19]. In self-presentation there is an opportunity to compensate for what is missing in life, to cultivate an idealized image, to demonstrate an alter ego instead of the real "Me". At the same time, digital self-presentation helps to experiment with different sub-personalities, to explore their features, which is part of the process of identity formation. Audience reactions contribute to the clarification and construction of the "Me-concept", the strengthening and/or correction of certain traits, the strengthening of the personality through self-expression and self-knowledge. On the other hand, digital communication carries risks for the integrity of identity, when the gap between the real and virtual images becomes too large, an internal conflict of inauthenticity may arise. Over time, the virtual image gradually replaces the real personality, and the artificial self becomes a protection against self-doubt, but the person becomes a hostage to a fictional image. Self-perception is negatively affected by social comparison in social networks, where everyone looks successful, attractive, self-realized, etc. Such upward social comparisons can form feelings of inferiority, anxiety about missed opportunities and reduce life satisfaction. This, in turn, creates a desire to improve one's online presentation to match the ideal image, which creates a vicious circle of self-discontent.

Self-presentation, which is congruent with personal identity, supports positive self-esteem, self-perception. Conscious and authentic self-disclosure on the Internet can have a therapeutic effect, help to process experiences, find like-minded people, establish oneself in one's principles and values. When a person uses self-presentation as a development tool, their digital identity enriches and complements the real one, promotes self-realization. If there is a large gap or excessive dependence on someone else's opinion, assessment, this can lead to psychological difficulties.

In the studies of Ukrainian scientists, the problem of digital self-presentation intersects with the study of identity, image and social skills. For example, V. Volynets investigated the construction of personal identity in virtual space and the specifics of its self-presentation [14]. It is noted that the digital space provides great opportunities for self-expression and the disclosure of potential, but a long stay online contributes to the growth of anxiety, fatigue, irritability, and the formation of a fragmented worldview in young people. O. Yegorova developed a structural model of the public image of the personality, which analyzed its components [20]. These are the components of the public "Me" (visual, verbal, behavioral elements of the image) and the relationships between them. Yu. Shpakovska and O. Vdovichenko studied the relationship between self-presentation on the Internet and a person's real identity [12]. The problem of correspondence between images, maintaining the integrity of the "Me" in different environments, and differences between online and offline images is emphasized. The results obtained indicate that under certain conditions, people can successfully integrate real and digital identities, but in other cases, dissociation occurs, which can negatively affect self-perception. In the field of specific manifestations of self-presentation, the work of K. Nastoyashcha, which analyzed the practices of self-presentation in the Internet space, deserves attention [19]. It is shown that the Internet provides unlimited opportunities for self-presentation in the virtual environment, and typical forms of modern self-presentation are described – from blogging to creating alternative personalities in cyberspace.

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In foreign studies, one of the key areas is the research of motivation and factors that encourage people to online self-presentation. T. Dinh and Y. Lee conducted a survey to identify psychological drivers of self-presentation in social networks [15]. They found that regular online monitoring of the lives of others leads to increased social comparisons and the emergence of fear of missing out on something important, and this is what forms the motivation for self-presentation. That is, when a person sees the "ideal" posts of others, he/she feels the need to publish something about him/herself, stay "in touch" and not look worse than others. Constant contemplation of idealized images of others leads to negative self-esteem and dissatisfaction with him/herself.

Another area of analysis is the strategies and styles of self-presentation in different cultures. An example is the research by A. Muidi, which studied the youth of Saudi Arabia [21]. It turned out that the most common self-presentation tactics among respondents were trying to be liked, being pleasant, emphasizing one's own advantages, and demonstrating moral virtues. The anonymity of accounts reinforced the tendency towards bold self-presentation, while openness restrained some manifestations of personality. Such cross-cultural studies show that people in different countries try to present themselves in a favorable light, but the specific methods and priorities may differ depending on cultural values.

Despite the growing number of studies on digital self-presentation, aspects that require further attention from scientists have been identified. To clarify the nature of the causal relationships between online self-presentation and self-esteem, longitudinal and experimental studies are needed, as well as improving methods for objective measurement of phenomena and qualitative methods of analysis. It is worth investigating the specifics of self-presentation depending on the platforms and formats of digital communication. There is almost no data on how self-presentations vary in different cultures, so a cross-cultural approach, taking into account subcultural differences, etc., seems promising. There are practically no educational programs that help people create correct self-presentations, consciously manage their digital image without harming psychological health, teach digital etiquette, and form media literacy in the broad sense of the word.

Thus, the analysis of the phenomenon of self-presentation of the individual in digital communications has shown that this is a complex multidimensional manifestation of the structures of the self, which requires a balance between strategy and authenticity, since self-presentation is not an episodic social action, but a continuous process of existence in virtual space. Correct self-presentation requires the development of new social competencies of the individual, criticality, reflexivity, empathy, in the formation of which the leading role belongs to psychologists.

#### **5.4 RESULTS OF THE STUDY OF THE FEATURES OF INDIVIDUAL SOCIAL INTELLIGENCE, SOCIAL PERCEPTION AND SELF-PRESENTATIONAL BEHAVIOR IN DIGITAL COMMUNICATIONS**

The aim of the empirical study was to determine the features of the relationship between the level of social intelligence, reflection, empathy and self-presentational strategies of young people in digital communications.

To achieve the goal, the following psychodiagnostic methods were used: an author's questionnaire developed to collect information about the most popular digital communication platforms, typical online behavior

strategies, attitudes towards the digital image of the "Me" and self-presentation, evaluation of others in social networks, level of emotional comfort in digital communication, etc. The questionnaire contained closed and open questions, which are grouped into blocks by topic. To study the level of social intelligence, the test "Social Intelligence" by J. Guilford was used. The reflexivity of the respondents was analyzed using the "Reflexivity Test" by V. Ponomareva, A. Karpov. Interpersonal empathy was studied using the questionnaire "Interpersonal Reactivity Index" (IRI) by M. Davis. Self-presentation strategies were assessed using the "Self-Presentation Tactics Scale" (SPTS) by S. Lee, B. Quigley and "Methods for assessing self-image in social networks" by S. Goss. To determine the features of the relationship between the studied phenomena, the Pearson  $r$ -correlation coefficient was used and the structural modeling (SEM) method was used to test the direct and indirect relationships between the latent constructs of social intelligence, reflection, empathy and self-presentation strategies. The quality of the SEM model was determined by the CFI, TLI, RMSEA indices and the  $\chi^2/df$  ratio.

The study involved 157 first-year (bachelor's) higher education students studying in various specialties (economics, international economic relations, management, marketing, psychology, journalism) at the Semyon Kuznets Kharkiv National Economic University. The age of the subjects was 18–24 years, female (85 people) and male (72 people). The study was conducted in a mixed format, that is, part of the surveys was conducted online using Google forms, part – in person, individually. The research sample was formed randomly. Before the study began, the participants had to read and accept informed consent.

The survey results revealed that the most popular platforms for digital communication are messengers and social networks: 93.7% of the respondents regularly use Telegram, 90.6% – YouTube, 85.4% – Instagram, 62.5% – TikTok, 29.1% – Facebook, 17.6% – Skype. The average time that the respondents spend on the Internet is 4.3 hours, but 33.7% admitted that it is 6 hours or more. The number of online friends and online thematic groups that the respondents have depends on the amount of time spent. 100% of the respondents have personal profiles in the digital space, of which 31.4% act as administrators of some thematic page.

An assessment of the factors that form the first impression of a person with whom online communication occurs showed that visual presentation was considered decisive: 79.1% – profile photo, avatar; 63.7% – page design: background, style, colors, etc.; 71.4% – content of posts, latest posts; 55.6% – number of subscribers. The emotional coloring of messages is also of great importance: 62.3% – emojis, memes, emotional reactions and posts; 67.6% – emotional coloring of the text, tone of the message; 41.7% – style of speech, literacy; 26.5% – the presence of mutual friends and/or subscriptions.

For self-presentation in digital communications, young people mainly use the following strategies: 62.4% – self-praise by emphasizing their own achievements; presentations of staged, studio, aesthetic photos; 58.4% prefer flattery, friendly statements about others to gain their favor; 46.3% – self-promotion, demonstration of competence, information about interesting projects, participation in various activities; 38.1% – providing help, support, advice; 21.5% – self-irony bordering on depreciation to create an image of a simple, accessible person; 15.7% – neutrality or ignoring a specific image.

Among the strategies of behavior in a conflict in digital communication, 42.5% of the respondents noted ignoring, passive avoidance; 31.3% – blocking, unfollowing, deleting, protecting personal space; 18.5% – attempting to resolve differences through argumentation and logic; 9.4% – arguing, open confrontation.

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The analysis of respondents' answers to open-ended questions showed that 78.5% of them indicated positive aspects and convenience of digital communication ("it is convenient to always be in touch", "I quickly learn the news", "I can communicate with different people", etc.); 65.3% noted the opportunity to receive support and attention ("I can feel that I am supported at any time", "when I am in a bad mood, someone is always there", etc.); 52.7% indicated the expansion of the communication circle due to new acquaintances ("I met people from other cities", "it is easier to start a conversation than in real life", "it is easier to tell a stranger about myself", etc.); 59.6% of the respondents noted a lack of emotionality in communication ("there is not enough intonation", "I do not always understand what the person meant", "a joke is not always perceived correctly", etc.); 44.1% mentioned the difficulties in understanding emotions, irony, sarcasm ("you can unintentionally offend", "irony is poorly read", etc.); 37.5% are dissatisfied with the unethical behavior of others ("people allow themselves to be rude", "not attentive to the feelings of others", "offend, do not apologize", etc.); 61.3% indicated that digital communication creates dependence on the opinions of others ("I expect likes", "I need approval in the group", "I hope they will pay attention to me", etc.); 47.4% consider online communication a challenge for self-discipline ("I spend too much time online", "sometimes I just go in", "I can't tear myself away", "I have to limit myself", etc.). In general, the answers to open-ended questions confirmed that young people perceive the Internet as a means of communication and self-expression.

Thus, the results of the survey showed that social networks and messengers are the leading space for interpersonal communication among young people, where platforms with multimedia content capabilities are preferred. Perception, the first impression of a person is formed by the visual and speech characteristics of the profile. Emotions are transmitted mainly through symbols and intonations of the text, which can lead to distortions and exaggerations. The motivation for self-presentation in social networks is communicative and self-affirmative. Young people actively form a "digital personality", their own virtual identity by integrating informational, social and emotional aspects of communication.

To study social intelligence, the test "Social Intelligence" by J. Guilford was used, the results obtained are presented in **Table 5.1**.

● **Table 5.1** Social intelligence indicators of higher education students ( $N = 157$ )

SI components	M(SD)
Understanding behavior results (subtest 1)	9.4 ± 2.1
Understanding nonverbal behavior (subtest 2)	8.3 ± 1.7
Understanding verbal messages content (subtest 3)	9.2 ± 1.8
Understanding the interpersonal situations dynamics (subtest 4)	7.5 ± 1.9
General level of social intelligence	34.4

The respondents showed an average level of social intelligence with differentiation by individual components. The highest scores were obtained on scales reflecting the ability to interpret the behavior of other people ( $M(SD) = 9.4 \pm 2.1$ ) and understand verbal information ( $M(SD) = 9.2 \pm 1.8$ ). That is, young people

interpret the behavior of others based on external signs, paying much less attention to motives, intentions or long-term consequences. Digital interaction occurs based on context, reactions, emotions, and not on logical analysis and prediction. An increase in scores on these components of social intelligence indicates that the subjects are oriented towards visual effects and speech markers of communication.

The lowest results were found on the scale of understanding the interpersonal situations dynamics ( $M(SD) = 7.5 \pm 1.9$ ), which may indicate insufficiently formed reflexivity. This is consistent with the results of studies by V. Romero, A. Paxton, who revealed the fragmentation of digital socialization of youth, which is an unfavorable factor in the development of strategic thinking [8]. The data of empirical studies by R. Swain et al. also confirm that there is a shift from the interpretation of non-verbal emotional signals to the analysis of discursive information in youth communication [22]. The weak ability to understand non-verbal manifestations ( $M(SD) = 8.3 \pm 1.7$ ), which was found in the subjects, may be a consequence of the fact that they prefer digital channels of communication rather than physical interaction.

Thus, the social intelligence of the higher education students who participated in the study is characterized by the fact that they use situational-contextual abilities instead of predictive and reflective ones to analyze and interpret interpersonal interaction situations. This is consistent with the data of O. Lazareva on the uneven development of the social intelligence components in adolescence [1]. The digital environment, for its part, promotes efficiency and accessibility of interaction, but complicates in-depth reflection, interpretation and long-term forecasting of communicative actions.

To assess the ability of applicants to self-reflection and reflection of the inner world of other people, the "Reflexivity Test" by V. Ponomaryova and A. Karpov was used, the results obtained are presented in **Table 5.2**.

● **Table 5.2** Reflexivity indicators of higher education students ( $N = 157$ )

Scales	M(sten)
Retrospective activity reflection	5.7
Situational reflection (deals with current activity)	5.2
Prospective reflection (future activity consideration)	6.3
Social reflection (analysis of communication and interaction with others)	5.5

The subjects showed an average level of reflexivity development with a predominance of prospective reflection. That is, the thinking reflexivity of higher education students is focused more on forecasting, assessing and planning future behavior, assessing risks and consequences, responsibility for decisions, etc. In digital interaction, prospective reflection performs a regulatory function, can increase the accuracy of communication strategies, self-control, reflective flexibility. This is one of the important components of personality maturity.

Retrospective and social reflection were also moderately expressed. Retrospective reflection is a purposeful analysis of past experience with the aim of evaluating and correcting it in the future, determining one's own responsibility for successes and failures. In digital communications, retrospective reflection

can be enhanced by access to message archives, publication histories; take on an intrusive appearance or contribute to the suppression of unpleasant memories by hiding or deleting information.

Social reflection refers to the awareness of how a person is perceived by communication partners and how they behave in situations of interaction with them. Digital communication complicates the reflexive understanding of the interlocutor's emotions, which is compensated for by the use of certain symbols (smileys, memes, reactions, etc.); social reflection can be fragmentary, dependent on platform algorithms, but it allows you to adjust self-presentation, avoid conflicts. The least developed was situational reflection, as the ability to be aware of yourself at the moment of interaction, evaluate your own actions, thoughts, emotional reactions, and flexibly respond to changing conditions in real time. In digital interaction, it is complicated by the lack of instant feedback, a decrease in the level of social control, and the accuracy of responding to social stimuli.

The obtained data are confirmed by the empirical results of Ukrainian and foreign scientists. In particular, O. Lazareva indicates that the cognitive and strategic components of social intelligence develop intensively in adolescence [1]. In the work of V. Romero, A. Paxton it was found that digital communication usually does not stimulate deep introspection, but, on the contrary, creates a superficial context for the perception of emotions [8]. R. Swain and colleagues note that low accuracy of emotion identification in digital interaction correlates with a lower level of social reflection, which is also reflected in our results [22]. T. Dinh, Y. Lee, in turn, prove that active online communication does not contribute to reflective awareness of the social context of communication [15]. A. Eginli, O. Tas emphasize the decrease in the accuracy of reactions and flexibility of communicative online behavior due to the limitation of the use of sensory modality [17]. Therefore, the identified features of reflexivity of higher education students allow us to consider it as a functional resource of adaptation in conditions of digital interaction, which provides predictive and regulatory support for the social behavior of young people.

To assess empathy, the questionnaire "Interpersonal Reactivity Index" IRI by M. Davis was used. The results are presented in **Table 5.3**.

● **Table 5.3** Interpersonal reactivity indicators of higher education students (N=157)

Scales	M(SD)
Decentration	18.5 ± 3.2
Compassion	17.6 ± 2.9
Empathic care	21.4 ± 3.7
Personal distress	14.8 ± 2.3

The obtained data indicate an average level of empathy development in the subjects. The highest scores were found on the "Empathic Care" scale (21.4 ± 3.7), which indicates a more developed ability of young people to imagine the experiences of other people, compassion, concern for them, a desire to help and support them in difficult moments of life. The indicators on the "Decentration" scale (18.5 ± 3.2)

indicate an average level of readiness of applicants for interpersonal perception without prejudice and limitations, the ability to take into account the point of view of another, his/her experience. The results on the "Compassion" scale ( $17.6 \pm 2.9$ ) indicate a moderately developed ability of the respondents to identify with the feelings of other people, imagining themselves in similar situations. The lowest results were found on the scale "Personal distress" ( $14.8 \pm 2.3$ ), which indicates a sufficient level of emotional stability development in the subjects, their ability to withstand stress when observing the suffering of another person, in conflict interaction with them. Thus, the data obtained indicate that empathy in the subjects is characterized by cognitive activity, a moderate level of affective involvement and emotional stability.

The comparison with the results of some Ukrainian and international studies showed that, in particular, O. Bokovets noted the presence of a stable level of emotional intelligence, empathy in modern students in social interaction in the environment of an educational institution, but less empathetic flexibility in digital communication [23]. M. Zhytynska notes that digital communications provide new opportunities for empathetic contact and at the same time reduce the depth of emotional involvement due to the superficial perception of network information [24]. In a study by R. Swain and colleagues, it was found that the accuracy of emotional identification in digital communication significantly deteriorates, which probably affects the decrease in compassion [22]. T. Dinh, Y. Lee, in turn, indicate that in there is an increase in cognitive empathy digital communications of young people, but a decrease in the affective component, which is partially consistent with the higher rates of empathic care, but lower – distress, which were found in our study [15]. S. Tong and colleagues note that self-presentation in the digital environment involves the management of emotional impressions, which affects the sincerity of empathic reactions – this aspect is indirectly confirmed by moderate rates of compassion and decentration in our respondents [16].

Thus, the results obtained indicate that the empathy of the studied higher education students is characterized by the ability to understand the emotions of other people, including in digital communication, emotional stability and a moderate level of affective involvement in the experiences of other people. The identified trends are consistent with the results of studies by other scientists.

To study the ways, in which people present themselves to others in social situations, the Self-Presentation Tactics Scale (SPTS) by S. Lee and B. Quigley was used. The results obtained are presented in **Table 5.4**.

● **Table 5.4** Self-presentation strategies indicators of higher education students ( $N = 157$ )

Strategies	M(SD)
Avoidance	$29.5 \pm 3.6$
Attraction behavior	$30.3 \pm 3.1$
Self-aggrandizement	$33.7 \pm 3.5$
Self-humiliation	$15.2 \pm 2.4$
Power influence	$23.8 \pm 2.5$

The data indicate the dominance of such self-presentation strategies as self-aggrandizement, attraction behavior, and avoidance. The highest average scores were obtained for the self-aggrandizement strategy ( $33.7 \pm 3.5$ ), which indicates the desire of higher education applicants to exaggerate their achievements and positive characteristics in communication, including in the digital environment. The indicators for the attraction behavior strategy ( $30.3 \pm 3.1$ ) are also quite high, which indicates the desire of young people to create a positive impression of themselves, establish friendly relations with other people, arouse affection and sympathy, this may indicate the desire of young people to build harmonious relationships based on social attractiveness. The avoidance strategy ( $29.5 \pm 3.6$ ), i.e., excuses and complaints, were less common, which indicates a tendency to avoid demonstrating vulnerability in communications. The general profile of respondents' self-presentational behavior is strategic, moderately flexible and socially oriented, with a pronounced desire to maintain a positive image.

The results of our study are consistent with the achievements of other scientists, in particular, Zh. Bogdan indicates that self-presentation is a flexible skill that contributes to a person's social adaptation and allows for varying tactics depending on the expectations of other people [18]. T. Dinh, Y. Lee prove that online self-presentation is often driven by social comparison and fear of missing out on something important, which contributes to the demonstration of positive content [15]. This is consistent with the high level of self-praise found in the respondents in our study. S. Tong and colleagues note that online user profiles are formed according to the "guided impression" model, which aims to increase attractiveness in the eyes of other people [16].

Thus, the results obtained demonstrate the strategic orientation of self-presentational behavior of higher education students, characterized by an orientation towards positive social perception, emotional self-expression and reduced demonstration of vulnerability and generally corresponds to the trends of modern digital self-presentational discourse.

To analyze how young people use social networks to create and maintain their own image, the "Methodology for assessing self-image in social networks" developed by S. Goss was used, the results are presented in **Table 5.5**.

● **Table 5.5** Distribution of the activity level of self-presentational behavior of higher education students ( $N = 157$ )

Active self-presentation levels	%
High	34.7
Middle	41.5
Low	23.8

The data indicate the prevalence of medium and high activity in the self-presentation of the respondents. Profiles in social networks can be considered as a space for managing the impression of oneself, for the purpose of social integration, self-realization, or increasing social (group) status. This may also indicate the orientation of young people towards socially desirable behavior, the desire to look attractive, demonstrate achievements, or follow certain subcultural standards in digital communications.

The results obtained are consistent with the conclusions of other researchers, namely A. Krasniakova notes that the Internet environment is a platform for experimenting with images, roles, and social masks, which is well consistent with the identified desire of young people to actively manage their digital image [4].

Thus, in the digital environment, higher education students show high activity in creating a public image, which confirms the significance of the virtual "Me" in modern society.

Next, we conducted a correlation analysis, the results of which are presented in **Table 5.6**.

● **Table 5.6** Features of the relationship between social intelligence, reflection, empathy, and self-presentation strategies ( $r$ )

Variables	SI1	SI2	SI3	SI4	SI int.
R1	.28	.25	.31	.27	.38
R2	.24	.22	.27	.23	.33
R3	.21	.19	.25	.22	.31
R4	.31	.27	.33	.30	.39
Em1	.26	.29	.28	.22	.33
Em2	.31	.33	.32	.29	.37
Em3	.34	.36	.38	.34	.42
Em4	.18	.15	.21	.25	.29
SP1	-.12	-.10	-.11	-.09	-.15
SP2	.19	.24	.21	.18	.28
SP3	.22	.20	.26	.21	.32
SP4	-.15	-.14	-.16	-.12	-.18
SP5	.05	.08	.06	.07	.11

Note: SI1 – understanding of the behavior results, SI2 – understanding of nonverbal behavior, SI3 – understanding of the verbal messages content, SI4 – understanding of the interpersonal situations dynamics, SI int. – general level of social intelligence; R1 – retrospective reflection of activity, R2 – situational reflection, R3 – prospective reflection, R4 – social reflection; Em1 – decentration, Em2 – compassion, Em3 – empathic care, Em4 – personal distress; SP1 – avoidance, SP2 – attraction behavior, SP3 – self-aggrandizement, SP4 – self-humiliation, SP5 – power influence

Positive correlations were found between social intelligence, empathy, reflection and self-presentation strategies. The highest coefficients are observed between the general indicator of social intelligence and indicators of empathy, in particular with empathic care ( $r = 0.42$ ) and personal distress ( $r = 0.37$ ). This indicates a close relationship between cognitive and affective sensitivity in interpersonal interaction. All types of reflection have moderate positive correlations with social intelligence ( $r = 0.31$ – $0.39$ ), which indicates that awareness of one's own mental states, behavior, and experience is an important component of

a person’s social competence. Of the self-presentation strategies, the attraction strategy is most closely correlated with social intelligence ( $r = 0.32$ ), which indicates a relationship between the ability to social predict and the attempt to create a positive impression.

At the same time, the strategy of self-humiliation and defensive strategies demonstrate weak negative relationships with indicators of social intelligence, which indicates their maladaptive role in social interaction.

The obtained results are consistent with the results of empirical studies by domestic and foreign scientists. In particular, O. Lazareva established that the strategic and cognitive components of social intelligence are closely related to the development of reflection and empathic mechanisms [1]. R. Swain and colleagues determined that the accuracy of emotion recognition contributes to the development of social intelligence and, accordingly, affective empathy – similar to the relationship we found [22]. In the study of T. Dinh, Y. Lee, it was demonstrated that social reflection and strategic self-presentation are interconnected with cognitive empathy [15]. K. Wei and co-authors note that the development of emotional intelligence involves a high level of social sensitivity and flexible models of self-presentation in social networks, which is also reflected in the positive relationships in our study [25].

Thus, the correlation analysis demonstrated that the cognitive and affective components of social functioning, namely social intelligence, empathy, reflection, self-presentation, have internal relationships. The identified relationships created the basis for testing the model of the influence of social intelligence on self-presentational behavior. To test the assumption of the mediated influence of social intelligence on self-presentational strategies through reflection and empathy, an extended mediation SEM model was constructed (Tables 5.7 and 5.8). Social intelligence was considered as a latent construct with four indicators ( $E11–E14$ ), reflection – with four ( $R1–R4$ ), empathy – with three ( $Em1–Em3$ ), self-presentational strategies – with three ( $SP2, SP3, SP5$ ). The model has the following fit indices:  $\chi^2/df < 3$ ,  $CFI \approx .95$ ,  $TLI \approx .93$ ,  $RMSEA \approx .05$ .

Table 5.7 Factor loadings of latent variable indicators

Latent construct	Indicator	Loading ( $\lambda$ )
1	2	3
Social intelligence	<i>SI1</i>	.72
	<i>SI2</i>	.69
	<i>SI3</i>	.74
	<i>SI4</i>	.68
Reflection	<i>R1</i>	.71
	<i>R2</i>	.73
	<i>R3</i>	.75
	<i>R4</i>	.71

Continuation of Table 5.7

1	2	3
Empathy	<i>Em1</i>	.71
	<i>Em2</i>	.78
	<i>Em3</i>	.83
Positive self-presentation strategies	<i>SP2</i>	.76
	<i>SP3</i>	.81
	<i>SP5</i>	.54

Note: *SI1* – understanding of the behavior results, *SI2* – understanding of nonverbal behavior, *SI3* – understanding of the verbal messages content, *SI4* – understanding of the interpersonal situations dynamics; *R1* – retrospective reflection of activity, *R2* – situational reflection, *R3* – prospective reflection, *R4* – social reflection; *Em1* – deceneration, *Em2* – compassion, *Em3* – empathic care; *SP2* – attraction behavior, *SP3* – self-aggrandizement, *SP5* – power influence

Thus, all indicators demonstrated sufficient factor loadings ( $\lambda = .54-.83$ ), which confirms the validity of the latent constructs in the model.

● **Table 5.8** Standardized structural coefficients in the SEM model

Path	$\beta$ (standardized)	p-level
<i>SI</i> → <i>R</i>	.45	.001
<i>SI</i> → <i>Em</i>	.38	.001
<i>R</i> → <i>CSP</i>	.22	.03
<i>Em</i> → <i>SP</i>	.35	.01
<i>SI</i> → <i>SP</i> (direct)	.08	.18

In the structural model, social intelligence was considered as a basic resource that affects reflection and empathy, and these constructs, in turn, are predictors of positive self-presentation strategies, that is, parallel mediators of the influence of social intelligence on behavioral manifestations of personality.

It has been found that social intelligence significantly affects both the level of reflection ( $\beta = .45$ ,  $p < 0.001$ ) and empathy ( $\beta = .38$ ,  $p < 0.001$ ). Reflection affects positive self-presentation strategies ( $\beta = .22$ ,  $p < 0.03$ ), empathy also affects positive self-presentation strategies ( $\beta = .35$ ,  $p < 0.01$ ). These influences are independent and statistically separate. The direct path from social intelligence to self-presentation strategies turned out to be statistically insignificant, which indicates the predominance of mediated influences. The total mediated effect through reflection and empathy was statistically significant ( $p < 0.01$ ), which allows us to consider reflection and empathy as parallel mediators. Therefore, the ability to be aware of one's own states, analyze the features of interaction with other people, understand the behavior, intentions and emotions of others determine the choice of socially acceptable and constructive self-presentation strategies.

## 5.5 DISCUSSION OF THE RESULTS OF SECTION 5

Thus, the theoretical analysis and empirical research on the problem of social intelligence, perception and self-presentation in digital communications showed that social intelligence, reflection and empathy form a holistic cognitive-emotional system that provides conscious regulation of interpersonal interaction and self-presentational activity in the virtual space. The correlation analysis revealed stable relationships between social intelligence, reflection, empathy and self-presentation strategies. Structural modeling allowed us to establish a hierarchy of influences and cause-and-effect relationships between constructs, in particular, it confirmed the indirect role of reflection and empathy in the influence of social intelligence on self-presentational behavior. The results obtained clarify the place of social intelligence in the structure of social interaction and expand modern ideas about the psychological factors of self-presentation in digital communications. The proposed model has theoretical and practical value, outlines promising areas of research and development of social competencies necessary for constructive interaction in a digitalized society.

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## FORMATION OF STUDENTS' RESEARCH COMPETENCE IN THE INNOVATIVE EDUCATIONAL ENVIRONMENT OF HIGHER EDUCATIONAL INSTITUTIONS

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### ABSTRACT

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The section is devoted to the study of the problem of forming research competence in students of higher educational institutions. An analysis of scientists' approaches to understanding the concept of "research competence" was carried out, the results of which emphasize the readiness of future specialists to independently carry out scientific and research activities, analyze processes and phenomena, and introduce innovations into professional practice. It is proved that the formation of research competence, which contributes to the development of students' critical thinking, the ability to independently solve professional issues, develops in them the ability to analyze, reflect, and experiment, is today a necessary condition for ensuring the quality of higher professional education. The formation features of the research competence of students, the principles of organizing their scientific and research activities in higher educational institutions of Ukraine, its structure, basic pedagogical conditions, technologies, and methods necessary for its effective implementation are determined. The results of an empirical study are presented, which indicate the effectiveness of the hypothesis put forward.

### KEYWORDS

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Research competence, higher education institution, innovative teaching methods, innovative educational environment, project-based learning, AI technologies.

### 6.1 UNDERSTANDING THE CONCEPT OF "RESEARCH COMPETENCE" OF HEI STUDENTS IN MODERN SCIENTIFIC RESEARCH

The modern stage of society development is characterized by dynamism, changes in the social structure and the emergence of qualitatively new types of activity in previously unknown areas. In these conditions, the ability to independently search for the necessary information, master the fundamental knowledge that constitutes the theoretical foundations of professional activity, the ability to create and implement new strategies of behavior and activity becomes especially important for a specialist. The research component becomes one of the leading in the structure of a specialist's readiness for professional activity, which is especially relevant in the context of the educational space transformation, the vocational education reform and the integration of Ukraine into the European educational space. Therefore, the issue of forming research competence is a popular requirement that is put forward today for graduates of higher education institutions. Higher professional education is faced with the need to transition to a more flexible system of

student training, to update the ways of designing and organizing the educational process, which will take into account the needs of the individual in developing his/her creative potential, which will allow forming a specialist who will be more susceptible to changes in the field of work, able to quickly find solutions and act in situations of uncertainty and contradiction, etc.

Today, the development of the research orientation of the future specialist in the educational practice of Ukrainian HEIs is not fully stimulated, as a result of which it is necessary to study the theoretical aspects of the concept of research competence of HEI students.

Students' scientific and research work is an important component of the educational process, which must be carried out from the first days of a student's study at a HEI within the framework of an educational space specially created for this purpose. The modern system of higher professional education should contribute to the development in the future specialist of a new type of intelligence, thinking, attitude to a new changing reality, and the main thing on this path is the formation of a system of cognitive abilities, close to the intelligence of a scientific worker. This requires the organization of the conditions of the educational process, in which the student will be involved in active intellectual, exploratory, creative and independent educational activities. This necessitates the generalization of existing experience, the development of new techniques and technologies that meet the requirements of educational programs and contribute to the development of students' research competence.

The theoretical basis for designing ways to form the research competence of students of higher education institutions was the work of foreign and domestic scientists, which substantiate the ideas of the competency approach (I. Bekh, O. Demchuk, Yu. Zinkovsky, O. Pometun, J. Raven, E. Toffler, R. White, R. Haigerty, N. Chomsky, M. Leiter, etc.); the theory and practice of research, experimental, innovative pedagogy is considered (A. Bermus, N. Bibik, G. Gorelikova, V. Kraevsky, V. Kremin, M. Rud, V. Serikov, S. Sysoeva, V. Laptev, etc.); the specifics of students' research competence are studied (M. Arkhipova, T. Baybara, L. Bondarenko, I. Drach, N. Demeshkant, N. Lyubchak, O. Popadych, G. Selevko, I. Frolova, N. Sosnytska, V. Sharko, V. Yatsenko); possibilities of cooperation between teachers and students in scientific research (L. Bachieva, O. Dubaseniuk, I. Zazyun, A. Mayhew, G. Mirskykh, E. Sypchuk, Yu. Solyanykov, L. Sushchenko, E. Short, etc.), features of its organization (O. Bondarevska, M. Kantorovych, G. Onkovych, N. Ostapenko, O. Semenog, I. Yakymanska, etc.); the issues of the formation of certain types of competence (speech competence (L. Merkulova, M. Knyazyan), general cultural competence (T. Yezhova, G. Shpytalevska), etc. are revealed.

It should be noted that although the principles and pedagogical means of developing the research skills of the individual have been the subject of research for several decades, as pedagogical means and conditions for their development in most of them, a rather narrow range of forms and methods of teaching was considered, which was limited to the framework of problem-based and contextual learning. It should also be noted that in previous years, research skills were considered from a narrow, purely didactic position. Nowadays, a whole range of innovative teaching technologies has been developed in pedagogy, including digital, appropriate forms, methods and tools, which have great potential in the development of students' research competence and require further development.

Let us turn to the analysis of the understanding of the "research competence" concept in modern scientific literature. Our analysis of scientific sources allowed us to identify several approaches to the study

of the "research competence" concept, which differ depending on what is taken as the basis of the definition. Supporters of the first approach proceed from the concept of "competence" and consider research competence as one of the key competencies, as a component of cognitive competence or professional competence. The integral professional competence of a specialist enables the effective solution of the entire range of professional tasks, and research competence acts as its component part. Thus, the task of forming research competence in a graduate of a higher education institution implies that the higher education system should be aimed at forming not only a professional performer, but a professional researcher who is able to easily adapt to rapidly changing conditions, find solutions to problems that arise as a result of possessing research skills and personality traits.

Representatives of the second approach see the definition of the "activity" concept as the basis and consider research competence as the readiness of an individual to carry out research activities (depending on the professional orientation of the student). For example, Yu. Nikorak, interprets research competence as "an integrative characteristic of a person, which involves possession of methodological knowledge, technology of research activity, recognition of their value and readiness to use them in professional activity, which is characterized by stable motivation", and positions it as an integral component of general and professional education, a characteristic that means possession of skills and methods of research activity at the level of technology in order to search for knowledge to solve educational problems [1]. According to O. Popadych, research competence encompasses a number of important skills: setting a research problem, formulating a hypothesis, selecting methodological tools, processing and interpreting results, participating in scientific discussions, as well as adapting and implementing scientific achievements in the real conditions of the educational process [2]. M. Golovan defines research competence as a holistic, integrative quality of a person, which combines knowledge, skills, abilities, experience of research activity, value attitudes and personal qualities and is manifested in the readiness and ability to conduct research in order to obtain new knowledge by applying methods of scientific knowledge, using a creative approach in goal setting, planning, analysis, decision-making and evaluation of the results of research activity" and emphasizes that this competence is formed in activity and always manifests itself under the condition of personal interest and value attitude to activity, thanks to which a high professional result is achieved [3].

The third group of researchers considers the result of a student's independent research activity not just the acquisition of new knowledge, but also changes in his/her personality. L. Bondarenko interprets research competence as the result of personal self-development, which is manifested in the ability of an individual to self-organize, generalize his/her experience, and form personally significant qualities of a researcher, in particular, such as innovative thinking, the ability to creative and innovative activity [4]. Scientists agree that although research competence is a product of learning, it does not directly follow from it, but is a consequence of the self-development of the student's personality, his/her personal growth, holistic self-organization and synthesis of his/her cognitive, activity and personal experience.

In recent scientific works of Ukrainian teachers, research competence is defined as "a complex quality of a student, which combines research abilities and skills in acquiring new knowledge by applying methods of scientific cognition, creative thinking, an innovative approach in planning, decision-making, discussion and evaluation of the results of research and experimental activities" [5].

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Students' research activities can contribute to the development of science and the improvement of the level of education in general. A student-researcher is an education seeker who possesses the necessary knowledge and skills to conduct scientific research, responsibly approaches his/her education and constantly develops as a professional. L. Vysochan believes that the development of students' research competence allows them to better understand their professional direction, develop their abilities and skills, which contributes to their successful career in the future [6].

We want to emphasize the transformative nature of research competence and propose to consider it as an integral personal quality, which is manifested in the readiness and ability to independently assimilate and obtain new knowledge as a result of transferring the semantic context of existing knowledge, skills, abilities and means of activity. The development of research skills in students makes it possible not only to reproduce the knowledge they have received in class, but also stimulates the independence of reasoning, conclusions that reflect the patterns and logical connections of educational information.

Typical components of research competence are working with scientific sources of information, critical understanding and analysis of the information received, the ability to present research results, explain and prove the correctness of one's position, etc. The most demanded skills and abilities of this competence are the ability to analyze, critically understand and evaluate the data obtained as a result of the selection [7, 8], interpret research results [8, 9], use the obtained data in practical work, plan and create one's own scientific products, be able to present and scale research results [8–10]. However, research competence should include not only individual skills and abilities, but also a personal attitude to this activity.

Note that scientific and research activities are not limited to working with scientific literature and its analysis. To implement it, students should also practice the ability to see the problem, ask questions, put forward a hypothesis, compare, classify, formulate a goal, structure the material, independently conduct an experiment, observe, explain and prove the correctness of their position.

Therefore, research competence always involves dynamic activity of students, which ensures the acquisition of the necessary skills of creative research activity, contributes to the independent solution of educational, scientific and professional tasks. Summarizing the approaches considered, we define students' research competence as a personal quality, which is manifested in the need for scientific activity, recognition of the value of research skills, readiness and ability to independently solve research and creative tasks; the ability to observe and analyze, put forward hypotheses; the ability to conduct scientific research, understand its methodology, organize a scientific experiment; generalize and predict the consequences of research activities, the ability to use scientific methods and approaches to solve problems in accordance with their professional direction, combining the qualities of a specialist and a researcher-scientist.

## 6.2 THE STRUCTURE OF HEI STUDENTS' RESEARCH COMPETENCE

The study of the understanding of research competence by modern scientists allows us to move on to the definition of its components, which, in our opinion, should be primarily aimed at in the educational process.

As we have already noted, the research competence of students is an integrative personal formation that is constituted in the process of studying and research activities in higher education institutions within the framework of independent transformative-heuristic mastery of theory and practice in the scientific field. It must necessarily include a constructive attitude towards innovation as a particularly significant personal and professional value.

Considering the structure and components of the research competence of HEI students, the researchers proposed the following interrelated components: information-communication (mastery of data collection methods in accordance with hypotheses, formation of empirical data sets, analysis of various sources of information, etc.), communicative (ability to work with respondents and cooperate with colleagues within the framework of research activities)(O. Bida); personal-creative (level of development of creative qualities of the individual)(S. Sysoeva); motivational, cognitive, activity-practical, reflective (M. Golovan, V. Yatsenko); motivational-stimulating, organizational (organization of cognitive activity), coordinating (management of the process of assimilation of research activity elements), cognitive, operational-activity, motivational, value-semantic (Yu. Slodynytska), etc. So, as we see, in the understanding of scientists, research competence appears as a complex synthesis of cognitive, subject-practical, and personal experience of students.

The main properties of research competence that must be taken into account in the process of determining the structure of this concept are:

- systematicity, which allows you to combine and create a single alloy of theory and practice;
- prevention, aimed at anticipating problems, their adequate assessment and warning of environmental signals as a condition for success;
- innovation, characterized by inertia in the process of carrying out activities, the ability to go beyond the traditional;
- forecasting, which involves predicting the future taking into account scientifically based analysis;
- reframing (a shift in the idea of what an object is now and what it can achieve);
- multidimensionality, which is expressed in the application of analytical, critical, communicative and other skills, as well as common sense, in research;
- mobility, which is manifested in the ability to dynamically act in any situation and on any subject material, etc.

We consider the most optimal structure of research competence, which includes motivational-value, cognitive-activity and personal-reflective components.

The motivational-value component reflects the system of values, needs and motivations that underlie research activity and is characterized by cognitive activity, a positive attitude towards research, interest in knowledge, awareness of the significance of science in society, internal motivation, acceptance of ethical norms of scientific activity, orientation towards scientific self-expression, independence in the process of cognition, decision-making, their evaluation, etc.

The cognitive-activity component includes the level of intelligence, the set of acquired knowledge that is necessary when performing research activity (basic knowledge, knowledge of the essence and technologies of research activity, criteria for the truth of scientific knowledge, academic integrity), experimental thinking; manifestation of creativity in a problem situation, research skills (the ability to navigate the

subject area of research; the ability to identify and understand problematic research issues, planning research activities, collecting, analyzing and interpreting data during the research), individual experience of scientific and research activities.

The personal-reflective component involves the personification of oneself as a researcher, the ability to analyze the results of one's own activity, the ability to evaluate its product, the correlation of results with the set goal, the assessment of one's own results, the ability to self-regulate, etc.

The full combination of all the considered components leads to the active development of the research competence of HEI students.

The study of the requirements for the formation of competencies in the educational standards of higher education in higher education institutions of Ukraine shows that one of the types of activity, for which graduates of various fields should prepare is scientific and research activity. The acquisition of primary knowledge, skills and abilities of scientific and research work is included in the basic requirements of educational and professional programs of any specialty at the bachelor's level and is designated as an integral competence. For example, "The ability of a person to solve complex specialized tasks and practical problems in a certain field of professional activity or in the process of learning, which involves the application of certain theories and methods of relevant sciences and is characterized by the complexity and uncertainty of conditions"; "The ability to solve complex specialized tasks and practical problems, characterized by the complexity and uncertainty of conditions, in the field of management or in the process of learning, which involves the application of theories and methods of social and behavioral sciences"; "The ability to search, critically analyze and synthesize information, apply a systematic approach to solving professional tasks"; "The ability to solve complex specialized tasks or practical problems of software engineering, characterized by the complexity and uncertainty of conditions, using theories and methods of information technologies" and others.

The analysis and comparison of general competencies (GC) of a number of technical and economic areas of training demonstrate that the requirements for the ability to conduct scientific and research activities are also traced in all formulations of GC ("able to use information collection methods"; "able to apply knowledge of the basics (of science)"; "analyze and interpret results"; "present the results of one's work in oral and written form"; "formulate goals"; "experiment", etc.).

In order to identify student' main general competencies that correspond to research competence, for example, let us analyze the general competencies presented in the Educational and Professional Program "Organizational Management and Logistics" (KhNAHU) (Table 6.1).

● **Table 6.1** General student competencies that form research activity

General competencies	Skill
1	2
GC1	The ability to exercise one's rights and obligations as a member of society, to be aware of the values of civil (democratic) society and the need for its sustainable development, the rule of law, the rights and freedoms of human and citizen in Ukraine.

**Continuation of Table 6.1**

1	2
GC2	The ability to preserve and multiply moral, cultural, scientific values, achievements of society based on understanding the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, technology and engineering, to use various types and forms of physical activity to lead a healthy lifestyle.
GC3	Ability to learn and master modern knowledge.
GC4	Ability to abstract thinking, analysis, synthesis.
GC5	Ability to apply knowledge in practical situations.
GC6	Knowledge and understanding of the subject area and understanding of professional activity.
GC7	Ability to communicate logically, reasoned and clearly in the state language both orally and in writing.
GC8	Ability to communicate in a foreign language.
GC9	Ability to conduct research at the appropriate level.
GC10	Possession of a culture of thinking, the ability to perceive, generalize and economically analyze information, set goals and choose ways to achieve them.
GC11	Skills in using information and communication technologies.
GC12	Ability to adapt and act in a new situation.
GC13	Ability to generate new ideas (creativity).
GC14	Ability to act on the basis of ethical considerations (motives).
GC 15	Ability to defend your point of view without destroying relationships.
GC16	Appreciation and respect for diversity and multiculturalism.
GC17	Ability to work in an international context.
GC18	Ability to make decisions and act in accordance with the principles of inadmissibility of corruption and manifestations of dishonesty.
GC19	Desire for personal and professional self-development, ability to prioritize, set personal goals, ability to learn from your own experience and the experience of others.
GC20	Ability to critically assess personal strengths and weaknesses, and to respond constructively to criticism directed at yourself.

As we can see, most of 20 general competencies presented that must be formed in a bachelor's graduate who studied under this program, can undoubtedly be attributed to research competence (GC3, GC4, GC5, GC6, GC7, GC9, GC10, GC12, GC 13, GC 18, GC 19, GC 20).

So, based on the analysis, it is possible to determine the leading functions of research competence: personal-developmental (development of cognitive processes, motivation, mastering methods of intellectual self-development and self-improvement of future specialists); scientific-methodological (formation of a holistic view of the modern scientific picture of the world, mastering methods of scientific cognition,

forming a scientific style of thinking); cultural (entry into the world of culture of the scientific community, involvement in the culture of research activity, in the broad socio-cultural context of the development of modern science and technology); value-oriented (the ability to realize the value of one's own research activity as a condition for realizing personal meaning in learning).

### **6.3 PRINCIPLES AND PEDAGOGICAL CONDITIONS FOR THE FORMATION OF STUDENTS' RESEARCH COMPETENCE**

While gaining knowledge in the educational process, students of higher education institutions repeatedly encounter the research environment, therefore, the presence of research competence is undoubtedly significant for them. Writing essays, completing test, laboratory, coursework, diploma projects, scientific works are some of the options for research activity, during which the student learns to clearly see the research problem, analyzes the known and unknown, and puts forward his/her subjective hypothesis on the basis of the analysis regarding the solution of a certain problem and justifies it.

In the process of learning, the student needs to create conditions for the further formation and support of the research competence development. We consider it necessary to highlight the main principles that are basic for the formation of research competence. These are the principles of systematicity, modularity, professional orientation and creative activity. In accordance with the principle of systematicity, the educational material must be complete and sufficient, and the structuring of the content into component parts must be carried out taking into account the relationships between them. It is also necessary that the content of the development of students' research competence be integrated with the content of various disciplines of the curriculum, developed taking into account the relevant inter-subject relationships. The principle of modularity involves the division of educational material into relatively independent, logically completed structural parts, taking into account the relationships between them, as well as supplementing it with methodological recommendations for mastering the content, aimed at activating students' independent work. The principle of professional orientation recognizes the need to give preference to material that reveals the role of research activity in the future profession and can be implemented in conditions close to professional research activity in the professional sphere. According to the principle of creative activity, the selection of educational material that creates a field for dynamic educational activity and stimulates creative thinking should be aimed at supporting and developing subjectivity in students, as well as teaching them to successfully overcome situations of uncertainty in the course of research activity.

These principles can be effectively implemented through the creation of certain pedagogical conditions that contribute to the effective course of the process of scientific and research activity of students from the standpoint of communication, interactions and interpersonal perception. When creating conditions for the successful organization of scientific and research activities, we consider it necessary to select educational technologies focused on students' research activities and take into account an interdisciplinary approach in the implementation of tasks of searching, processing and synthesizing scientific material in co-creation with fellow students and teachers. It is also important for students to constantly focus on

understanding the importance of developing their creative potential, forming research qualities of a person who is able to understand the problem, formulate it and find ways to solve it [11], which can be done by activating students' research activities through their participation in practice-oriented and interdisciplinary projects, competitions, the work of creative laboratories, student scientific and practical conferences, research and experimental sites of general educational institutions, etc. The formation of students' research competence will be facilitated by the creation of appropriate educational and methodological support and the development of an adequate assessment system. We consider it relevant to introduce the discipline "Fundamentals of Students' Educational and Research Activities" into the educational process, within the framework of which students will have the opportunity to master the technology of organizing and conducting scientific research, learn to generalize the experience of experimental work, as well as create an information portal on the organization of students' educational and research activities on the website of the educational institution.

Among the pedagogical conditions for the formation of students' research competence, it is necessary to highlight the solution of problem tasks and situations that contribute to the development of research skills, critical thinking, and creative intuition. O. Bida, Syroezhko, K. Shovsh emphasize the need to integrate elements of research activity into the content of academic disciplines and to activate students' cognitive activity through problem-based research tasks [12]. The content of training should include such possible methods of scientific and creative activity as independent transfer of previously acquired knowledge and skills to a new situation, identification of a new problem in a familiar situation or in a new function of an object, identification of alternative solutions to the problem, combination of previously known methods in order to create new ones.

According to M. Yevtukh and L. Borysenko, achieving optimality in the organization of scientific and research activities is facilitated by observing the following conditions: ensuring the integrity of the future specialist's formation as a researcher during professional training, systematic mastery of the independent research activity components, filling the educational process with a personally valuable meaning for each student; using the potential of the educational disciplines of the psychological and pedagogical cycle, preparing scientific works in the direction of creating a cognitive and creative atmosphere, in which the student actively develops and implements original research ideas, projects, shows research initiative and perseverance; implementing pedagogical strategies aimed at long-term prospective research, covering the material of several content modules and providing for a multi-faceted study of a certain problem, mutual coordination of experimental means, and gradual complication of scientific tasks [13].

An important condition for the formation of students' research competence is the creation of an educational and reflective environment in the educational process of higher education institutions, which will contribute to the development of the individual, self-correction and self-improvement of his/her professional socio-psychological resources. Such an innovative educational environment expands the cognitive capabilities of the educational space, ensures freedom of scientific creativity, creates conditions for changing ideas about oneself as a person and a future professional.

In the educational process of Ukrainian higher education institutions, the main way to solve the problem of forming students' research competence is traditionally their own research activity. It should be noted

that in higher education in Ukraine, students' research as an independent type of their educational activity is carried out to varying degrees in combination with other types of their theoretical and practical training. This work of students reflects the main features of professional research activity: it is a creative process, during which valuable scientific knowledge is born or new facets of already known information are revealed.

Pedagogical science has accumulated rich experience in using various technologies in the educational process. Let us consider those of them that, in our opinion, contribute to the development of research skills and involve students in research activities. Modular learning technology provides individualization of learning in terms of such parameters as the content of learning, the pace of knowledge acquisition, the level of independence, methods and techniques of learning, methods of control and self-control. The learning mechanism within such a program consists of search methods, setting cognitive tasks. Within the framework of modular technology, the student works mainly independently, learning goal-setting, self-planning, self-organization and self-control. Within the framework of this technology, students successfully develop the ability to independently acquire their own knowledge and creatively apply it in practice, as well as the ability to search, select, process, analyze and transmit information.

The use of project learning technologies, which is based on theoretical ideas about the essence and content of research competence, the internal capabilities of this technology, the conditions for its combination with the requirements of problem-based modular, concentrated learning technologies, provides for the consistent complication of projects, an increase in the level of productivity of the dominant activity, an increase in the specific weight and interdisciplinary nature of students' independent project activity, and immersion of students in situations that are as close as possible to the real conditions of professional activity, has proven effective in the work on the formation of students' research competence. Project technology is widely used in educational practice and successfully contributes to the inclusion of students in research activities. This technology is focused on the independent acquisition and application of new knowledge, skills, value orientations and relationships. The use of project technologies involves the consistent students' implementation of projects of three levels in the learning process: small mini-projects (for example, solving traditional educational tasks with practical content) of the first level, corresponding to situational activity, focused on the formation of positive motivation for research activity, the accumulation of primary experience; medium-sized projects of the second level (midi-projects), corresponding to the situational activity of the individual (for example, preparation of practice-oriented essays, reports, game modeling of professional activity, etc.); large educational projects (maxi-projects) of the third level, corresponding to the creative activity of the individual (for example, course and diploma theses). It is important in the process of implementing this activity that teachers constantly monitor the levels of formation of students' research competence.

Successful formation of research competence is possible if interdisciplinary approaches to learning are used. Students should be able to interact with different fields of knowledge, carry out joint projects with other specialties, which will not only develop their research activity, but also contribute to the emergence of new scientific ideas. The creation of project groups, where students have the opportunity to work on real scientific or social problems, gaining experience in teamwork and acquiring practical skills for solving specific tasks [14].

The technology of problem-based learning is aimed at building an educational process, the purpose of which is not only to master the results of scientific knowledge and the system of knowledge, but also to master the process of obtaining these results, the formation of the student's cognitive independence, the development of creative abilities. Problem-based learning ensures the formation of theoretical (intellectual) skills – analysis and synthesis, induction and deduction, comparison and juxtaposition, abstraction and concretization, classification and systematization, analogy and generalization, theoretical modeling and reflection.

Portfolio technology is a technology that can be used as the basis of a student's individual learning path. In the educational process, a portfolio is used as a way for students to accumulate, systematize, and generalize various educational materials. This technology contributes to the development of students' information skills, and also acts as a motivational factor for educational and research activities.

Interactive technologies involve building a research process through constant, active interaction of all students who successfully form a complex of communicative skills, participate in scientific dialogue, debates, and discussions.

Practical work experience provides an opportunity to determine the conditions for the formation of students' research competence by applying innovative learning technologies, which contributes to the implementation of important principles of learning: problem-based, scientific, professional orientation, and self-study. As common methods and means of innovative technologies, we will name discussion, brainstorming, training, role and business games, case method, presentation, project method, problem-based learning methods, etc. The value of these methods lies in the fact that they activate and actualize a certain set of knowledge that students need to master in solving scientific and educational problems, which is an effective tool for forming the research competence of future specialists.

The urgent need to involve students in scientific activity, to form and develop their research competence skills direct teachers to find ways to solve this problem using the disciplines they teach.

To develop the research competence of students, it is important to provide appropriate conditions for their study and work with scientific literature, research methods and techniques, to involve students in scientific activity, to provide them with the opportunity to participate in scientific conferences and other scientific events, to promote the creation of research and project groups.

An effective motivating factor is the creation of incentives for research by the management of higher education institutions: scholarships for scientific achievements, competitions, grants, awards, publications in student collections. This forms an awareness of the value of scientific work and increases students' self-esteem.

Specifying the teaching technologies, we can distinguish teaching methods in accordance with the previously identified components of research competence, which are reflected in **Table 6.2**.

Despite the huge potential, the formation of research competence faces a number of barriers, in particular, overloading of curricula (students do not have time for scientific activity); lack of methodological support for teachers and students regarding scientific practices; formalism in approaches to term papers and diploma works; insufficient access to high-quality sources of information due to database limitations or language barrier. Personal difficulties should also be taken into account, such as, for example, fear of

error or criticism; low self-esteem; low level of academic writing, etc. Overcoming these barriers is possible thanks to a holistic policy of HEIs, the creation of a supportive educational environment.

● **Table 6.2** Teaching methods in accordance with the components of students' research competence

Research competence component	Method	Method concretization
Motivational-value	Training programs, game-based learning, modular learning	Training to increase personal motivation to achieve the goal; independent cognitive activity aimed at searching, processing and assimilating information, involvement in creative activity
Cognitive -activity	business games, role-playing games, cases, interactive methods, research and project-based learning, analytical work, participation in conferences, etc.	Debates, round tables, brainstorming, professional cases, which contribute to the development of critical thinking, the ability to raise new issues, develop various arguments, make independent thoughtful decisions. Work with scientific texts, articles. Collection and analysis of information, description, generalization, writing scientific articles in conjunction with the scientific supervisor
Personal-reflective	Description of your achievements and options for developing your own career	Compilation of a portfolio, personal career plan

#### 6.4 INNOVATIVE EDUCATIONAL ENVIRONMENT OF HEIS AS THE MOST EFFECTIVE SPACE FOR THE STUDENTS' RESEARCH COMPETENCE FORMATION

Along with the high importance of the formation of research competence in students, it is necessary to create an educational environment that would support the development of research skills in them. This path involves organizing the educational process in such a way that students are included in various types of activities and communication with the aim not only of forming knowledge and skills, but also of gaining experience in conducting research activities, communication experience, independent problem solving, etc. Involving students in productive activities as active participants in solving problems, performing research tasks and projects is a necessary condition for the formation of their research experience as a characteristic feature of research competence.

The modern development of science and technology, the digitalization of education, the challenges of globalization and the orientation towards European standards of higher education lead to the transformation of the traditional educational space. The integration of artificial intelligence (AI) into the educational process creates unique opportunities for the development of critical thinking, analytical abilities and research skills. A new type of environment is emerging — an innovative educational environment of higher education, which not only ensures the educational process, but also stimulates the development of creativity, initiative, independence, and activity in achieving the goal in students.

HEIs strive for partnerships with IT companies, industries, and startups, which allows students to conduct research focused on the real needs of society. This makes research activities meaningful and applied. Students can choose educational trajectories, disciplines, and research topics. The opportunity to participate in Erasmus+ programs, double diplomas, and international internships enhances their research potential.

An innovative educational environment is a set of content, forms, methods, and learning tools based on the transfer of achievements of modern science and technology into the educational process of HEIs and aimed at forming innovative personalities of students capable of making creative decisions in the professional field. The innovative educational environment of a modern higher education institution is a product of subject-subject relations of all participants in the educational process and is based on the innovative content of education, reflected in the author's educational programs and individual educational trajectories of students, on innovative educational technologies based on a transdisciplinary approach, interactive teaching methods and tutoring, on new forms of educational environment management based on continuous monitoring and regulation of hazards affecting the quality of education in HEIs

This environment can be presented as a set of material and technical, informational, organizational, pedagogical and value-cultural conditions, a complex system that necessarily includes digital resources (EIOS, online courses, electronic libraries), modern innovative technologies (ICT, multimedia), developed infrastructure that creates conditions for the development of students' creative thinking, their self-development, integration of science and practice, as well as the formation of students' readiness for innovative activity. An innovative educational environment provides students with free access to educational and scientific resources, supports interdisciplinary connections, functions in the logic of openness, mobility, academic integrity, actively uses digital technologies. This creates conditions for free scientific research, the development of reflection and critical thinking.

Platforms, such as Moodle, Google Classroom, Canvas, Zoom, etc., are actively implemented in the innovative educational environment of modern Ukrainian HEIs, hybrid and distance learning is used. Such technologies allow integrating analytical tasks, test models of research, and simulations into classes [15]. Working with databases (Scopus, Web of Science), using online questionnaires (Google Forms, SurveyMonkey), analytics (SPSS, Excel, Tableau), and visualizations (Canva, MindMeister) should be systematic [16]. Digital tools help to effectively collect, analyze, and present data. Effective mentoring involves not only consulting on coursework or thesis papers, but also supporting the student's research development throughout the entire period of study: from the idea to its implementation, publication, and participation in grants. This creates a sense of involvement in the student's academic community.

Undoubtedly, the integration of AI tools into the educational process increases the effectiveness of the research skills formation compared to traditional methods, but it is necessary to remember that this growth is accompanied by such new challenges as the risk of forming a superficial understanding of research procedures, excessive use of AI in writing scientific papers, the presence of false, fabricated AI information in the data.

Today, digital technologies have become an integral part of education. Especially, various online tools, simulations and virtual experiments are widely used in higher education institutions to increase the research potential of students and their orientation to independent research. These methodological approaches not only equip students with theoretical knowledge, but also develop their practical and analytical

thinking. Virtual laboratories (platforms, such as PhET, Labster and PraxiLabs) allow students to safely conduct scientific experiments. In such laboratories, students visually observe scientific phenomena, study the experimental model and analyze the results. Using digital simulation, students have the opportunity to virtually recreate real-world processes. Using online platforms, such as Google Classroom, Padlet, Miro, and ResearchGate, students participate in scientific projects, share experimental results, and develop critical thinking skills. Using ChatGPT, Scite.ai, and other AI-based tools, students apply modern approaches to information analysis, scientific research, and more.

### 6.5 ANALYSIS OF THE RESULTS OF THE IMPLEMENTATION OF PEDAGOGICAL CONDITIONS FOR THE STUDENTS' RESEARCH COMPETENCE FORMATION IN THE HEI INNOVATIVE EDUCATIONAL ENVIRONMENT

The implementation of the proposed pedagogical conditions for the formation of HEI students' research competence in the empirical study conducted by us on the basis of the Kharkiv National Automobile and Highway University during 2022–2025 demonstrated the following results.

The total number of participants (CG – 88 students, and EG – 86 students) was 174 people. The participants of the experiment were informed about the study and the opportunity to refuse to participate in the experiment without any consequences for their education, and they gave their consent. To verify the results of the formation of students' research competence, we conducted a comparative analysis with their testing at the beginning of their studies in the 1st year (2022–2023 academic year).

The analysis showed that before the experimental work, the formation level of research competence in the control and experimental groups did not have significant differences (**Table 6.3**).

● **Table 6.3** Indicators of the research competence formation level in students of the CG and EG (before the experiment)

Competence component	Level of research competence formation					
	Low		Sufficient		High	
	CG	EG	CG	EG	CG	EG
Motivational-value	57.9% (51 st.)	60.5% (52 st.)	36.4% (32 st.)	34.9% (30 st.)	5.7% (5 st.)	4.6% (4 st.)
Cognitive-activity	61.4% (54 st.)	62.8% (54 st.)	31.8% (28 st.)	31.4% (27 st.)	6.8% (6 st.)	5.8% (5 st.)
Personal-reflective	61.4% (54 st.)	61.6% (53 st.)	32.9% (29 st.)	32.6% (28 st.)	5.7% (5 st.)	5.8% (5 st.)

The data obtained after the experiment allow us to state the positive impact of the innovative educational environment, where the selection of educational technologies focused on the research activities of students, an interdisciplinary approach to the implementation of the tasks of searching, processing and

synthesizing scientific material, the integration of elements of research activity into the content of academic disciplines and the activation of students' cognitive activity through problem-based research tasks were carried out, students' participation in research practice-oriented projects, scientific and practical conferences was ensured, the discipline "Fundamentals of students' educational and research activities" was introduced into the educational process, assistance was organized to form a holistic formation of a future specialist as a researcher during his/her professional training, etc. (Table 6.4).

● **Table 6.4** Indicators of the research competence formation level in CG and EG students (after the experiment)

Competence component	Level of research competence formation					
	Low		Sufficient		High	
	CG	CG	CG	CG	CG	CG
Motivational-value	44.3% (39 st.)	18.6% (16 st.)	45.5% (40 st.)	60.5% (52 st.)	10.2% (9 st.)	20.9% (18 st.)
Cognitive-activity	34.1% (30 st.)	18.6% (16 st.)	53.4% (47 st.)	54.7% (47 st.)	12.5% (11 st.)	26.7% (23 st.)
Personal-reflective	45.4% (40 st.)	15.2% (13 st.)	43.2% (38 st.)	59.3% (51 st.)	11.4% (10 st.)	25.5% (22 st.)

Thus, the study yielded the following results: the number of students who are at a high level of research competence formation increased in the experimental and control groups, respectively (differences are statistically significant): according to the criterion of the motivational-value component – by 16.3% in the EG and 4.5% in the CG; according to the criterion of the cognitive-activity component – by 20.9% in the EG and 5.7% in the CG; according to the criterion of the personal-reflective component – by 19.7% in the EG and 5.7% in the CG. The number of students who have a sufficient formation level of this competence increased, according to the criterion of the motivational-value component, by 25.6% in the EG and 9.1% in the CG; according to the criterion of the cognitive-activity component – by 23.3% in the EG and 21.6% in the CG; by the criterion of the personal-reflective component – by 26.7% in the EG and 10.3% in the CG. The number of students with a low formation level of this competence decreased by the criterion of the motivational-value component by 41.9% in the EG and 13.6% in the CG; by the criterion of the cognitive-activity component – by 44.2% in the EG and 27.3% in the CG; by the criterion of the personal-reflective component – by 46.4% in the EG and 16.0% in the CG.

The analysis and interpretation of the results of our experimental study proved the effectiveness of the pedagogical conditions implementation and the use of the proposed methods for the formation of research competence in students in the conditions of the HEI innovative educational environment. The indicator of the research competence formation level had statistically significant differences between the groups after the experiment at  $p < 0.05$ .

It can be concluded that the results of the empirical part of the study confirmed the correctness of our theoretical consideration of the problem of forming students' research competence, and the proposed

pedagogical conditions and methods of their implementation in the HEI innovative educational environment.

## 6.6 DISCUSSION OF THE STUDY RESULTS

The conducted study allows us to state that the formation of research competence has not only academic, but also professional significance, since it ensures the student's readiness to participate in innovative projects, allows him/her to work effectively with large amounts of information, develops such emotional and volitional qualities as perseverance, self-discipline, responsibility in him/her, and also increases the competitiveness of the graduate in the labor market.

In our opinion, competence in the field of scientific research can be defined as an integral, unalienable characteristic of the personality of a future specialist of any profile. Research competence is a set of personal qualities that involves the possession of research knowledge and skills. We include three components in the structure of research competence: motivational-value, cognitive-activity, and personal-reflective.

Summarizing the theoretical analysis of scientific sources, we have identified pedagogical conditions and specific technologies and teaching methods that, when implemented into the educational process of the innovative educational environment of higher education institutions, will contribute to the development of students' research competence. Carrying out research activities under the conditions we have defined activates students' awareness of their own position, forms skills of discussion, argumentation, tolerant exchange of opinions, develops a scientific worldview, systems thinking, information analysis skills, promotes the development of leadership qualities (preparation and management of projects, participation in conferences, management of research groups), civic activity (through volunteer initiatives, analytics of social processes), ethical responsibility (observance of academic integrity, scientific ethics), etc.

The prospects of scientific research are to reveal the pedagogical potential of the innovative educational space of higher education institutions in the digital environment for the formation of students' research competence through the organization of systematic work in the digital environment based on cloud, mobile technologies, online courses and global resources of the Internet space; the inclusion of independent research activities based on digital environment resources (scientific portals, online courses, etc.) in the personal educational experience of students, etc.

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## INTEGRATION OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES INTO THE PROCESS OF TEACHING A FOREIGN LANGUAGE AS A WAY TO FORMING HIGHER EDUCATION STUDENTS' INTERCULTURAL COMPETENCE

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### ABSTRACT

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The focus of modern methodological studies is the problem of introducing artificial intelligence technologies into the process of teaching foreign languages as a way to form intercultural competence of higher education students. AI makes it possible to create conditions that are as close as possible to the real needs of speakers through a personalized educational environment, simulation of authentic communicative scenarios and provision of instant feedback. The paper analyzes the idea of hybrid pedagogy, which involves the joint activity of a person and artificial intelligence, with AI being responsible for performing routine tasks, and the role of a facilitator within the integrated human-AI system is performed by the human brain. The concept of pedagogical scaffolding (cognitive scaffolding) as a means of supporting students at all stages of the ICC formation is substantiated. This strategy is effective in overcoming the algorithmic bias of large language models and in developing the student's ability to critically analyze recommendations and conclusions generated by artificial intelligence.

### KEYWORDS

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Artificial intelligence, foreign language, intercultural competence, critical thinking, large language models, hybrid pedagogy, scaffolding.

### 7.1 PEDAGOGICAL PREREQUISITES AND EDUCATIONAL OPPORTUNITIES FOR USING ARTIFICIAL INTELLIGENCE IN TEACHING A FOREIGN LANGUAGE TO FORM INTERCULTURAL COMPETENCE

The emergence and rapid introduction of artificial intelligence (AI) into the field of higher education has marked a new era in methodology. This is especially important in the field of teaching language disciplines, since the competence of the applicant depends on the availability of access to authentic materials, the professional resource of the teacher and the possibility of receiving adequate feedback. This range of requirements can be implemented under the conditions of transformation of education at the level of digitalization, when distance and blended learning takes place in a single digital environment.

Innovative processes require the emergence of new language units for nomination, which, on the one hand, is a guarantee of continuous intellectualization of speech, and on the other hand, creates obstacles to intercultural interaction. Rapid updating of the lexical dictionary, neologization of speech, the emergence of a large number of general and narrow-field terminology complicates mutual understanding between representatives of different cultural communities.

The solution to the problem lies in improving approaches to language education, when situations, outcomes and strategies are modeled as close as possible to the conditions of authentic realities. With the collaboration of human intelligence and the capabilities of neural networks, it is possible to avoid overgeneralization or, conversely, overspecification of concepts that complicate understanding in the global space.

AI, which encompasses systems capable of performing such cognitive tasks as natural language understanding, pattern recognition and adaptive learning, is integrated into the educational environment to provide a personalized approach and instant feedback. This allows students to achieve professional and academic goals faster [1].

The use of AI in the educational process promotes learning autonomy and is the key to a successful future for students, since almost every field of knowledge involves international interaction, such as: international research projects, scientific events, internships, advanced training, work in virtual teams. Autonomy in language learning, according to researchers, has become a leading educational concept when there has been a paradigm shift from traditional, teacher-centered learning to methods that are student-centered, where the student him/herself has the opportunity to influence the learning process. This system of self-directed learning emphasizes the ability of students to define their own goals, choose appropriate methods, and track progress [2].

Thus, within the framework of a scenario with the integration of intercultural contexts, students may be asked to participate in dialogues where they choose responses to the requests of a virtual interlocutor from another culture. Instant feedback allows you to assess how successful the chosen communication strategy is and does it meet the norms of intercultural etiquette. Adaptive exercises may include modeling business negotiations, academic discussions, or presentations, where students need to predict audience reactions, select appropriate lexical and grammatical constructions, and substantiate their statements with arguments.

In this way, the involvement of AI tools makes foreign language classes the key environment, in which the task of developing intercultural competence (ICC) skills is best implemented. It updates its functionality, ceasing to be just a safeguard against misunderstandings, but instead becomes an indicator of early detection of cultural "blind spots".

However, despite the widespread use and proven high effectiveness of AI in improving linguistic accuracy and overcoming psychological barriers, the integration of network technologies into higher education is still accompanied by a significant list of insufficiently researched and unresolved issues.

First, the very concept of ICC is ambiguous and cannot be unified, at least at the current stage of scientific development, since it is located in an interdisciplinary field – at the intersection of constantly changing socio-cultural, political and technological factors. Secondly, AI can currently only imitate, not create, personal experiences of impressions and feelings, which is an obstacle to empathy and tolerance, and therefore jeopardizes intercultural sensitivity.

Thirdly, when large language models (LLM agents) are used to simulate intercultural interaction, they can synchronously reproduce or reinforce cultural bias and stereotypes, learning from generalized data sets [3]. This disadvantage can be amplified when AI is unable to distinguish such artistic techniques as contextual irony and post-irony, sarcasm, grotesque, etc.

Based on this, the neural network can cause a reverse effect on the speaker, further distancing him/her from intercultural awareness. This necessitates an adjustment of the goal of modern methodology – to focus on the speaker's ICC formation in close connection with the specified reverse effect neutralization.

## **7.2 THEORETICAL AND PRACTICAL ASPECTS OF INTEGRATING AI INTO THE DEVELOPMENT OF INTERCULTURAL COMPETENCE: A REVIEW AND ANALYSIS OF SCIENTIFIC DISCOURSE**

As the theoretical and methodological basis of our investigation, we chose the scientific achievements of 2015–2025, which indicate that researchers in the last decade are interested in the topics of the content evolution of ICC, personalization of learning, hybrid (blended) pedagogy, the introduction of editing systems and automated assessment of speakers' skills and abilities, scaffolding as a cognitive framework, the issue of anxiety and the risk of dependence on AI, overcoming algorithmic bias and the formation of critical interaction competence (CIC). Such problems are determined by the formation goals of ICC – the ability to plan, produce, critically evaluate and correct interaction in a multicultural environment.

Intercultural competence in the context of globalization is both a goal and a tool of modern learning. From a historical perspective, scientific thought interprets the ICC model as one that includes knowledge, skills of interpretation and interaction, as well as critical cultural awareness [4]. It just laid the theoretical foundation for determining the features of the approach to the ICC development in the process of teaching foreign languages at the end of the last century.

Decades later, the role of foreign language education reaches a new level, growing to the concept of "intercultural citizenship". Such a role reflects the speaker's significant progress: from communication skills (when the focus of attention is fixed on how to convey one's opinion and adequately understand the answer) to intercultural competence (when the speaker is able to understand the cultural context, and therefore, the reasons for a certain behavior of the interlocutor), and then directly to cultural citizenship (when the speaker takes responsibility for the causes and consequences of his/her own linguistic behavior and is able to influence the result) [5].

The definition and systematization of the components led to the next stage of the dynamics of knowledge about ICC – the need to understand the process and pyramidal model of the ICC development and the systematization of the criteria for evaluating the results. Researchers have proposed the following interpretation of the process model and the "pyramid" of ICC: initial attitudes → knowledge and skills → internal results (for example, a change in the coordinate system) → external results (adequate and effective behavioral manifestations) [6, 7]. By a change in the coordinate system we mean a change in value orientations, when a person moves away from a stable understanding of objects and phenomena beyond their own cultural awareness and develops the ability to perceive the universe from the standpoint of different cultural logics. The result of this is the formation of cognitive flexibility skills.

The further task of the methodology was to create an educational environment open to dialogue, where participants gain experience in intercultural interaction. The emergence of AI technologies has provided almost limitless opportunities for modeling such interactions, which has significantly changed approaches to

language teaching. AI-based education offers the possibility of learning that is more personalized, flexible, inclusive, and engaging; it can provide teachers and students with tools that allow them to respond not only to what is being learned, but also to how it is being learned and how the student feels about it [8].

It is important to note that in this study, we rely on the definition of AI proposed by Luckin, where AI is characterized as computer systems that have been designed to interact with the world using abilities (e.g., visual perception and speech recognition) and intellectual behaviors (e.g., evaluating available information and then using the most appropriate actions to achieve a given goal) that have traditionally been considered purely human [8].

This approach, deeply rooted in the concept of Intelligent Computer-Assistant Language Learning (ICALL) and based on the ability of AI to imitate human cognitive processes, makes it possible to create adaptive learning environments. Therefore, the neural network becomes a full participant in the educational process, taking its rightful place in the human-AI system, where the teacher and artificial intelligence function as logically connected subjects of pedagogical support.

Campbell-Hovis notes that this is possible thanks to big data processing and machine learning algorithms that adapt in real time to the behavior of the learner, calculating his/her strengths and weaknesses and creating a fully personalized set of learning materials for each lesson (which gives rise to new ethical implications). Moreover, and no less importantly, the algorithm learns from both individual and collective behavior of the learners, which makes its predictive ability even stronger [9].

Other expected benefits of ICALL include: individualized learning pace; instant feedback as a strong motivational factor; individualized repetition of topics and emphasis on tasks, in which the speaker showed weak results; rapid and objective assessment of his/her progress; better understanding of learning preferences and strategies; prediction of future results with high probability; rapid and objective evaluation of learning tools [10].

Thanks to the collaboration between AI and the teacher in a single human-AI system, the level of stereotyping, generalization and excessive cognitive load of the speaker is reduced, which allows avoiding the danger of demotivation. Such a hybrid approach, combining classroom and online learning formats, is currently considered by researchers to be the most relevant and productive [11–14].

Our personal experience of teaching a foreign language in higher education institutions allows us to conclude that demotivation mostly occurs at the intermediate and higher levels of foreign language competence, when the speaker feels the effect of the so-called plateau and is not ready to continue learning further. This often occurs as a natural phenomenon and mostly concerns responsible students who have achieved significant success in the target language at previous stages.

At this level, learners usually do not ask themselves what to say when they find themselves in real communication situations. Instead, the question "How to say it correctly and as close as possible to natural language?" poses an almost impossible task for them, since comparing themselves with native speakers has the opposite effect, which students are often unaware of. Therefore, support is especially important, and the very concept of cognitive framework (or scaffolding) is the object of lively interest of methodologists [15–18].

Modern digital tools, including platforms for editing texts, automatic evaluation and simulation of communicative scenarios, will provide systemic support at this stage and help reduce psychological barriers,

since the speaker will focus not on his/her own fears and experiences, but on tasks of a substantive and pragmatic nature, on the analysis of the interlocutor's communicative strategies and on the development of the ability to respond adequately in different cultural contexts. Such a focus allows the student to gradually switch attention from his/her own anxiety to effective interaction, which contributes to the formation of intercultural competence.

In such conditions, there is a foundation for the organic development of the speaker's autonomy, when he/she not only adequately responds to his/her own flaws and imperfections in speech, but can also be a participant-mentor, helping others navigate the educational material, correct mistakes and form their own communicative initiatives. Our experience shows that, provided a comfortable environment of mutual assistance and trust is created, students generally respond positively to such mentoring and are willing to show initiative.

### **7.3 APPLICATION OF HYBRID LEARNING METHODOLOGY AS PEDAGOGICAL SCAFFOLDING WITH THE INVOLVEMENT OF ARTIFICIAL INTELLIGENCE TOOLS**

The justification of research goals and hypotheses regarding the integration of artificial intelligence into foreign language teaching for the formation of ICC is determined by the fact that in modern language education there is an urgent need for interdisciplinary integration. The combination of intellectualized meanings, as conveyed by language units to denote cultural, scientific, historical, philosophical, historiographical concepts, creates qualitative conditions for acquiring intercultural communication skills.

This provision defines the purpose of this scientific investigation – to theoretically substantiate and describe the features of the integration of artificial intelligence technologies into the process of teaching foreign languages. To this end, we plan to consider such issues as: the concept of hybrid learning – as a pedagogical model of AI-oriented learning, scaffolding strategies – as implementation tools, the impact of AI on the emotional-value sphere – as a psychological basis, the role of AI in combining theoretical knowledge with practical skills – as the implementation of a cognitive-practical mechanism, the development of critical interaction competence (CIC) – as a strategy.

Hybrid (blended) learning integrates classroom interaction between the teacher and students with distance work formats in an online environment, which is a logical response to the challenges facing the educational community in the era of learning digitalization. The popularity of this approach is evidenced by the increasingly frequent appearance of relevant research in foreign and domestic science [11–13].

Given the specifics of a personalized approach to learning, AI selects the complexity of tasks based on the student's level of experience, focusing on the fact that stimulating the competence growth includes a clear focus on surpassing previously achieved results. As a result, the hybrid learning method does not simply use technology, but creates a new pedagogical paradigm, where AI acts as a teacher's assistant, which takes the connection between theory and practice to a qualitatively different level and contributes to the development of intercultural skills.

Under the conditions of hybrid learning, classroom lessons give students the opportunity to receive support from the teacher as a facilitator. This support is important at different levels and stages, is associated

with the psychological characteristics of the individual and directly depends on the degree of his/her trust in the teacher. Moreover, it is aimed not to contradict the student's own autonomy, but on the contrary, to give/her him the opportunity to flexibly adapt to new conditions and support his/her motivation.

In turn, artificial intelligence tools, the effectiveness of which has been proven through theoretical and empirical research, provide systematic and personalized support in the online environment. Scientific discourse emphasizes the importance of asynchronous scenarios, when digital platforms cease to be only auxiliary tools and are able to perform the function of scaffolding (cognitive framework) [16].

Researchers describe scaffolding strategies as temporary auxiliary components that will help students develop new ideas, new concepts and new abilities [17]. Based on the scaffolding model developed by A. Walqui [18], we offer a list of cognitive scaffolding in teaching a foreign language that will reduce anxiety and increase student motivation. Within the framework of our topic, we also define the nature of ICC skills that are key for each of the stages:

1. Modeling. The teacher involves AI functionality in the educational material, which provides samples of authentic speech, and speech behavior (oral and written) in accordance with the topic (ChatGPT, Claude, Google Gemini). Depending on the level of the target audience, such samples are guidelines for imitation at different levels of language, such as: phonetic, lexical, grammatical, syntactic and discursive. At this stage, the effectiveness of AI tools contributes to the formation and consolidation of language norms, reduces the anxiety of speakers, and determines the directions of the sociocultural awareness formation.

The development of ICC skills at this stage involves the stimulation of basic intercultural sensitivity and attentiveness to verbal signals and sociocultural norms. Students gain experience in recognizing differences in the speech of speakers of another culture and acquire the skills to interpret authentic language samples.

They gain their first experience of empathic feelings, which helps to avoid cultural conflicts, become more attentive to the context of communication and the stylistic aspects that native speakers use to communicate the meanings of certain concepts. They also have an increased tendency to correctly and critically analyze linguistic material in light of the relevant socio-cultural context.

2. Bridging (relying on previously acquired knowledge and skills). At this stage, the AI functionality helps the teacher to connect new material with previous knowledge, establishing a logical sequence between the structural components of knowledge that must be mastered. We believe that at this stage, the resources of both languages - the source and the target - can be involved, if this makes it possible to reduce the speaker's tension and anxiety. Models, such as ChatGPT and DeepL are ideal for this.

So, DeepL is one of the most advanced neural machine translation services, and it is valuable for speakers in that it establishes interlingual parallels when processing foreign-language texts, allowing them to see the connection between familiar and new speech units. Also, when working with texts presented in parallel in both languages on the same screen, the user has the opportunity to expand knowledge about the stylistic and connotative aspects of the target language.

The development of ICC skills at this stage occurs due to the ability to compare their own cultural experience with new knowledge. Students activate the ability to establish intercultural correspondences and contradictions. In the process of working with language material, applicants learn to form critical thinking about their own stereotypes and prejudices, adapt previously acquired knowledge to formulate conclusions

or justify statements in a new communication situation. They identify signs (symbols) of culture in texts or oral speech.

3. Contextualization. The ability of a neural network to create an authentic environment is critically important at this stage, because the teacher's task is to present new material through the prism of a socio-cultural context, the bearer of which he/she is not. However, in the age of high technology, what will become a difficulty for a person will be another ordinary task for artificial intelligence.

It is about the connotative load of linguistic units, stylistic figures, metaphor and phraseology, with the help of which such pragmatic content is created. Firstly, this task involves the use of high-quality audio-visual content. Secondly, for the implementation of this goal, platforms that do not simply provide lists of words, compounds and sentences, but are able to offer real communicative scenarios are effective.

In contextual support, teachers can use a large number of AI tools, so that students gain knowledge not only about the form, but also about the meaning and function of language, such as: platforms for cultural context and realities (National Geographic Learning, BBC Learning English); audio and video functionality, when the interesting content of the proposed materials is enhanced by the availability of video subtitles in different languages, which is extremely important for the formation of ICC (YouTube, TED-Ed, FluentU, Ed-puzzle); multimodal dictionaries and corpora (Oxford Learner's Dictionary, Cambridge Dictionary, Longman Dictionary, Sketch Engine); multilingual generative platforms for creating visualizations (Canva, DALLE, MidJourney).

The development of ICC skills at this stage is aimed at activating the ability to interpret cultural meanings and social expectations of the interlocutor. Students develop the ability to adapt their own speech to the cultural norms and contexts of a different mentality.

Cognitive empathy and the ability to predict the interlocutor's reactions are developed; skills for analyzing the goals and intentions of the interlocutor in intercultural interaction in different genres of speech appear. The level of contextuality is emphasized, which increases communicative flexibility and readiness for adaptation. Students learn to evaluate the effectiveness of their own strategies in certain situations.

4. Building linguistic and cognitive schemes. At this stage, AI assists the teacher in creating content that helps simplify the perception of information and structure educational material in the form of tables, diagrams, schemes, interactive boards (Canva, Miro, Whimsical, MindMeister).

The development of ICC skills at this stage includes the systematization of cultural and linguistic information. Applicants acquire skills in building cultural patterns; skills in highlighting key elements of culture are formed; the ability to predict communication scenarios and adjust their own behavior is developed. In addition, intercultural conflict resolution skills are practiced.

5. Text representation. The teacher's task at this stage of scaffolding is to form the genre and style awareness of applicants, as an important ICC component. Thus, one content is presented with the help of AI tools in different genre colors, in different speech styles, which is especially effective for students of technical specialties, since they can see the features in the use of academic and professional contexts. We consider the best resources for this to be QuillBot, DeepL Write, Jasper AI.

The development of ICC skills at this stage involves the activation of ICC skills related to the ability to adapt their speech in accordance with the conditions of a certain cultural or professional situation.

Students gain experience in using the style and register of speech in accordance with the characteristics of the addressee and at the same time learn to evaluate their own texts from the point of view of cultural acceptability and genre compliance.

6. Development of metacognition. This stage is strategic for the formation of student autonomy and critical interaction competence skills. For this task, it is advisable to use AI chatbots with feedback and AWE systems. The student can independently choose the pace of mastering the material in hybrid learning conditions, independently check their knowledge, see progress, receive instant feedback using Grammarly, Perplexity, Edmodo, Kahoot!, Quizlet, Mem AI.

The development of ICC skills at this stage is already associated with the status of autonomy and CIC. Students understand how to analyze their own communicative actions and make informed decisions in an intercultural dimension. They develop skills of self-analysis and self-control, can form skills of mentoring and supporting other speakers, integrate their knowledge and skills into experience in order to be maximally effective when interacting with interlocutors. They can critically evaluate information and digital resources, analyze biases and adapt strategies.

Since a large number of world and Ukrainian educational institutions offer the study of specialized disciplines in foreign languages (English, etc.), there is a need for widespread use of scaffolding in technical HEIs, since the pedagogical idea underlying this concept involves temporary support for students in overcoming difficulties in completing assigned tasks. This is important, because these difficulties are associated with the simultaneous study of professional and language material, when a foreign language becomes a tool for acquiring knowledge [15].

In addition, the simulation of communicative scenarios and the implementation of project tasks is a trigger mechanism for activating soft skills that are in demand at this stage of society's development, such as: stress resistance, critical and analytical thinking, teamwork, risk management and time management.

#### **7.4 THE AI IMPACT ON THE AFFECTIVE SPHERE: FROM REDUCING ANXIETY TO AUTONOMY**

Affective factors are the litmus test that determines an individual's psychological readiness for interlingual interaction and the limits of his/her personal barriers in dialogue with representatives of another culture. Due to the fact that in the conditions of ICC an individual deals with manifestations of a different mentality, he/she sometimes feels awkward when it is necessary to politely interrupt the interlocutor, take the initiative in communication, change the direction of the discussion, encourage the partner to discuss certain topics.

In this case, it is effective to involve two teachers as facilitators of the educational process, one of whom is a native speaker of the culture of the country whose language is being studied. Such assistance will help students immerse themselves in authentic content without losing focus on the learning objectives.

Sociocultural competence is formed at the stage when the speaker is ready to overcome certain psychological barriers and perceive another system of values as equal. To this end, creating a safe learning environment plays a key role, and assisting AI systems instead of a living person in performing certain tasks will only improve the result, as it will avoid direct evaluation by another person.

Affective factors play a significant role in learning a foreign language, as they demonstrate the interaction between the speaker's feelings, thinking and actions, so there is no separation of reason and emotions; emotions, thinking and learning are interconnected [19].

First, from a neurobiological point of view, it is believed that the human brain has difficulty remembering things that do not have an emotional connection, since without emotions there will be no interest, awareness and attention, which are critical components in the learning process. In addition, to attract the student's attention to the necessary information, the brain must associate it with meaningful experiences to facilitate memorization, and here affective factors come to the rescue, which make each learning experience meaningful and prevent low self-esteem [19].

The use of automated writing evaluation systems (AWE) and editing tools allows you to make learning as comfortable as possible for learners. Systems, such as Grammarly, Write & Improve (Cambridge), Criterion (ETS), in foreign language learning are a tool for formative assessment and pedagogical scaffolding (cognitive framework), which is effective in a human-AI system, provided that it is combined with the expert role of the teacher.

Monitoring the process and learning outcomes of students of higher educational institutions who used Grammarly on an ongoing basis to identify various types of errors and analyze texts for coherence, logic of presentation, structure and genre compliance, proves an increase in the level of motivation and reflection of speakers. Such an empirical study by Dizon and Gold demonstrated a significant reduction in language anxiety and an increase in autonomy among the respondents. It was concluded that AWE allows students to spend less working memory on lower-level tasks (e.g., spelling, grammar, punctuation, translation) and thus more time on higher-level tasks, such as writing and organizing a text [20].

The authors' analysis of student surveys showed that 70% of the participants believed that Grammarly helped them identify errors in foreign language texts and flag them for further correction. About 40% of the respondents said that they liked using the AWE tool, and about 30% found it easy to use. The last identified benefit was increased confidence, which was mentioned by five participants [20].

The results obtained in this investigation are consistent with the results of other studies on the role of AWE systems in foreign language teaching, which empirically prove the ability of digital tools to reduce anxiety and, conversely, increase autonomy in working with educational material [21].

AI systems also help prevent plateauing in second language learning. The student receives immediate feedback and becomes more confident in correcting his/her mistakes, which allows him/her to avoid feelings of failure and uncertainty about his/her choice. Speakers can track their own progress over time by leveraging AI analytics, such as personalized performance dashboards, learning progress visualizations, and automated error and achievement reports. Combined with the ability to receive recommendations for further tasks, this reduces the cognitive load on students and increases their readiness for ICC.

However, it is important for speakers to learn to critically evaluate the feedback they receive, taking responsibility for which results to accept and which need to be adjusted with the facilitator. Moreover, while AWE tools provide unbiased and timely feedback, passive acceptance of results can lead to overreliance on AI.

Therefore, the key skill in the collaboration of human intelligence with artificial intelligence is not just the ability to react quickly and correct errors, choosing from the proposed options, but also understanding

why the editing system marked certain points as incorrect and suggested correction, and which errors should be given targeted attention as systemic. This human ability turns automatic correction into a conscious learning process, which is important for forming the ability to draw conclusions about the effectiveness of communicative decisions in an intercultural context

## **7.5 AI FOR THE FORMATION OF THE COGNITIVE–PRACTICAL COMPONENT OF INTERCULTURAL COMPETENCE: FROM KNOWLEDGE TO PRACTICE**

Determining indicators of the state of the ICC formation should take into account cognitive (knowledge) and practical (activity) criteria. The content of the first criterion is the concept of the level of knowledge acquisition, its determination through various indicators that reflect the volume, depth and systematic understanding of sociocultural and intercultural categories.

The second criterion reflects the state of implementation of acquired skills and abilities, the degree of autonomy, when speakers feel confident, operating with strategies of speech behavior, are able to select them in accordance with the stylistic and genre nature of communication, and also skillfully correct them if necessary. It is the practical criterion that determines the state of the intercultural competence formation.

In the context of digital learning, the formation of ICC cognitive and practical components is ensured by the ability of AI to provide appropriate authentic content, adapt the learning environment to the personal needs of the speaker, and simulate professionally oriented communication. AI platforms allow students to move from theoretical language acquisition to its functional use in intercultural situations without cognitive overload.

AI tools provide the opportunity to work with authentic texts of almost any level of complexity for higher education students. This is especially important for future specialists in technical industries, because the latest information in the field of science is initially published in the languages of international communication.

The status of English as a globally recognized lingua franca puts it in first place among the languages, by which the most valuable knowledge of humanity is transmitted to the next generations. That is why the functionality of almost every digital platform has the ability to choose English as the main language of the interface and educational content.

AI can provide competent support even in setting goals and predicting learning outcomes. Such opportunities are realized thanks to adaptive learning systems – AI platforms that analyze individual progress, offer personalized recommendations, and help optimize the educational process based on data on the actions and achievements of each student, such as: monitoring progress, forming individual goals, reporting on achieved results, and predicting the complexity of subsequent tasks [22].

For this, users will find Quizlet, Praktika – AI Language Tutor, Duolingo, Babbel useful. They allow you to track your progress in learning – both in the short and long term, taking into account the monitoring of success at certain stages of the course. If a student does not cope with a certain part of the task, he/she can return to it over time, because the results obtained earlier are stored and taken into account.

To determine the criteria for selecting AI platforms for learning a foreign language, we asked the applicants a question about the critical advantage of each of them, which determines the priority of its use. The

survey was attended by 12 first and second year students of the Faculty of Mechanical Engineering aged 17 to 19, who, according to them, are familiar with each of the proposed platforms and systematically use their resource for learning a foreign language or translating and editing texts.

It turned out that most often students chose two of them – Duolingo (75%) and Quizlet (25%). Among the advantages chosen by Quizlet supporters, it was indicated that it allows you to create the necessary content as quickly as possible and store it for a long time, use sets of cards compiled by other users, upload them to the library, edit as needed, change the direction of translation, etc. In contrast, among the answer options of Duolingo supporters, it was interesting that the ability to learn a certain foreign language by choosing another foreign language as the source was identified as a critical selection criterion, namely: students chose German as the target language, and English as the source language.

In the survey of platforms for editing and composing texts of various genres of general and professional interest (except for ChatGPT and Gemini, which were not taken into account in this study as undisputed favorites based on the results of previous surveys), DeepL (66%), Grammarly (8.3%) and Quillbot (8.3%) were in the lead. We repeat that all students who participated in the survey reported that they systematically turned to these digital tools precisely to get help in working with foreign language content.

According to the respondents, the popularity of DeepL is associated, firstly, with its contextual, genre and style sensitivity, and secondly, with the ability to quickly go to the application website through a pop-up window at the bottom of the screen if necessary to edit the text. The results obtained are consistent with research conducted by teachers of the Faculty of Applied Linguistics in the Czech Republic.

Thus, 94% of the students reported that using DeepL helped them improve their language skills, 63% noticed a significant increase in vocabulary as a result of using DeepL Translator, 100% of the participants admitted that they would use DeepL in the future [23].

In the study, we share the opinion of domestic educators who propose dividing task types by functional purpose into the following groups:

- 1) for better vocabulary acquisition (YouGlish, Google Images, etc.);
- 2) for developing academic reading, analytical thinking, and oral speaking skills (QuillBot, etc.);
- 3) for expanding vocabulary (Gemini, ChatGPT);
- 4) for developing English professional writing skills (Grammarly, etc.);
- 5) for improving public speaking, communication, and creative thinking skills (Google Slides, Prezi, etc.);
- 6) to practice communication skills in answering technical questions and discussing career goals (Interview Warmup by Google, etc.);
- 7) to systematize vocabulary (ChatGPT, QuillBot, etc.);
- 8) to consolidate and systematize knowledge (Quizlet, etc.);
- 9) to practice correct pronunciation (GetPronounce)[1].

In our opinion, such a classification of tasks can significantly contribute to the development of ICC, since it takes into account its three main components, namely: cognitive, practical and reflective. It is based on a functional approach to communicative activity.

First, tasks that emphasize work with vocabulary provide a stable cognitive basis for ICC – the ability to perceive socioculturally marked and terminological units, rules and norms that regulate the use of language

in an authentic environment. They help to avoid literal translation and allow for a more subtle understanding of the meaning of words (reflected in positions 1, 3, 7, 8).

Secondly, tasks aimed at academic reading, critical thinking, oral and written speech imitate authentic written and oral situations, contributing to understanding the mechanisms of transmitting ideas and meanings, taking into account genre-style scenarios and understanding the pragmatic conditionality of communicative choice (reflected in positions 2, 4).

Thirdly, tasks on public speaking, communication and creative writing imitate authentic intercultural communication situations and require taking into account the social roles of the interlocutors. Such tasks form the ability to understand both the real goal of the interlocutor and his/her hidden intentions and desire to influence the listener (reflected in positions 5, 6).

Fourthly, tasks for the development of correct pronunciation help create a positive image of the speaker, and therefore, minimize psychological and communicative barriers. Correct pronunciation reduces the risk of misunderstandings and cultural conflicts (reflected in position 9).

The presence of a high level of orthoepic competence also provides a communicative function, because it stimulates the speaker to use words belonging to the layer of internationalisms, since such language units, as a rule, have similarities in form, but differences in phonetic composition. This also applies to words that are usually in the passive vocabulary due to their excessive graphic complexity or low frequency of use in the texts that the speaker has dealt with.

The complexity of the globalized multicultural environment, in which different systems of values, norms and ideas coexist, sometimes polar opposite to each other, requires complex forms for obtaining knowledge and forming competencies. Therefore, in harmony with the hybrid approach to learning, a hybrid approach to the use of artificial intelligence tools should be formed. Since platforms have different functionalities, their integrated use seems to be effective for building competence in the target language. This approach enables a balanced use of technologies, where the advantages of one tool compensate for the disadvantages of another.

## **7.6 DEVELOPING CRITICAL INTERACTIONAL COMPETENCE (CIC) AND OVERCOMING ALGORITHMIC BIAS**

A fundamental problem with large language models (LLMs) is their susceptibility to algorithmic bias. LLMs, when trained on vast amounts of data from the Internet, can inadvertently reinforce or reproduce stereotypical views of cultures, which undermines empathy and intercultural tolerance. Moreover, users of systems based on large language models are highly prone to getting stuck in interactive actions with culturally essentialized narratives [3].

Blindly accepting such data "on faith" does not necessarily depend on the development level of the individual's intelligence. Due to the possibility of instantly obtaining the necessary information or answering a question that requires a significant expenditure of time for the human brain, a person gradually gets used to unconditionally trusting the results offered by neural networks. It begins to perceive AI as a more advanced source of information and data processing compared to the capabilities of human intelligence, since AI is built on the basis of encyclopedic possession of information.

The problem of bias arises not when speakers encounter its manifestations and adequately respond to them, but when there is an ignoring of the danger of consolidating harmful stereotypes. Then there is a routinization of ideas that were initially formed in the human mind as assumptions. The teacher's help is mandatory at this stage, because he/she can direct the applicant to a critical assessment of the results obtained with the help of AI.

The need to develop intercultural sensitivity is associated with the natural tendency of carriers of a certain culture to stereotyping and an essentialist worldview. From a philosophical point of view, such a worldview is based on the idea that things have eternal and unchanging meanings. It is formed through the received interactions with the universe and is deeply rooted in cognitive structures, which causes a certain insensitivity and sometimes intolerance to ideas that are at odds with the acquired experience. In this way, each representative of a cultural community has his/her own "repertoire" of behavior in communicative scenarios.

The solution is not to abandon LLMs, but to transform their bias into a didactic trigger. We consider the debriefing method to be effective in solving this problem. This approach has been described in scientific research as one that allows reducing students' indecisiveness during the production of monological and dialogical speech, while overcoming the difficulties of teachers in using appropriate questions to actualize the acquired knowledge [24, 25].

Researchers identify six benefits of debriefing as a method of cognitive scaffolding:

- 1) debriefing serves as a universal tool for foreign language learning from one's own experience;
- 2) it helps to develop a student's development trajectory to achieve short-term and long-term learning goals;
- 3) debriefing promotes team consolidation;
- 4) this technique is valuable for the professional competence development;
- 5) in the process of debriefing, students develop important skills in providing constructive feedback;
- 6) debriefing creates a space of emotional support [24].

In our opinion, the most important factor in implementing this strategy in the learning process is debriefing as an opportunity to create a space of emotional support.

After LLM simulations (for example, a simulation of an interview for an international position, during which there is a risk of algorithmic bias), the teacher conducts a mandatory debriefing, which is central to the development of critical interactional competence. The purpose of the debriefing is to stimulate students to engage higher cognitive functions and critically analyze the results obtained with the help of AI.

For example, they should establish:

- what cultural assumptions or stereotypes, explicit or implicit, were noticed during the communication;
- whether the reaction to the relevant cultural triggers was adequate or rather essentialist;
- how and to what extent the proposed interaction scenario differed from the expected;
- how, in their opinion, the communicative strategy needs to be adapted to overcome algorithmic biases.

This reflection process teaches students to recognize problematic aspects, critically evaluate AI as a source of information, take responsibility and consciously choose an adequate language strategy in intercultural communication.

## 7.7 DISCUSSION OF THE RESULTS OF SECTION 7

The functionality of modern AI systems creates unprecedented potential for learning foreign languages and forming students' intercultural competence. What was an innovation ten or twenty years ago has become systematic due to the speed of society's transition to intelligent technologies.

Artificial intelligence tools allow us to bring the educational process to a qualitatively new level, when a safe adaptive environment is created using digital platforms, in which the speaker him/herself chooses a comfortable learning mode. Creating simulation scenarios allows the learner to immerse him/herself in an authentic context and use the acquired knowledge in practice.

However, there is a threat of excessive dependence of speakers on recommendations and conclusions obtained thanks to algorithmically controlled systems. This disadvantage of AI must be corrected through pedagogical support by a teacher who performs the function of a facilitator in the educational process. AI is able to provide instant feedback, but it is characterized by algorithmic bias. Instead, the teacher chooses digital tools that can support the speaker in his/her autonomy of learning, reduce anxiety and develop critical interaction competence.

The ability to be critical of the information received in the asynchronous digital environment is formed as a response to the teacher's efforts to establish an open dialogue with the learner in order to prevent the entrenchment of misconceptions. If this is ignored, then the routinization of assumptions and stereotyping of ideas may occur.

The idea of hybrid pedagogy, when the collaboration of AI and human intelligence within the framework of classroom and online learning is considered as a complementary and logically motivated process, is a conceptually sound and methodologically appropriate response to the challenges of education digital transformation. Moreover, the hybrid approach is also recommended to be used when performing various, including professional, communicative tasks, involving the potential of several AIs in accordance with the tasks and goals of the lesson, if necessary.

This is confirmed by numerous surveys and questionnaires of higher education students who take advantage of digital platforms to improve their results in learning foreign languages. Thus, the students note the opportunity to learn a third foreign language using a second foreign language as a source (for example, English – a globally recognized lingua franca) as a critical advantage of Duolingo, and DeepL's contextual, genre and stylistic sensitivity as a functionality that ensures the most adequate reproduction of meanings, terminological accuracy and semantic capacity as a guarantee of successful intercultural communication.

Pedagogical scaffolding as a model of cognitive framework, involving such techniques of practical support for the speaker as: modeling, bridging, contextualization, construction of linguistic and cognitive schemes, text representation and development of metacognition, is focused on helping the student in the gradual transition from guided activity to autonomous, conscious and self-regulated learning.

The idea of debriefing after LLM simulations – as a technique for overcoming the consequences of stereotyping and essentialist narratives – allows you to form the affective-reflexive components critical for ICC – intercultural sensitivity and tolerance. Such an environment creates psychological support for

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speakers, allows you to establish cause-and-effect relationships in the behavior of speakers of another culture, and learn to perceive their value system as equal to your own.

In conclusion, we note that the integration of artificial intelligence technologies into foreign language teaching is not only a technological innovation, but also a necessity for the effective formation of higher education students' intercultural competence. In the future, further, more detailed research into the impact of the debriefing method on real changes in the cultural interaction of speakers, the degree of their tolerance and intercultural sensitivity is possible.

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## THE DUAL IMPACT OF GENERATIVE AI IN HIGHER EDUCATION SECOND LANGUAGE TRAINING: OPPORTUNITIES, ETHICAL CHALLENGES, AND PEDAGOGICAL RESPONSES

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### ABSTRACT

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In the early 2020s, a new trend in the development of technologies took place, which was marked by the emergence and lightning-fast spread of Generative Artificial Intelligence (otherwise known as GenAI). This article focuses on its role in education and everyday life, during which the authors will try to prove the effectiveness, feasibility and advantages of using AI in language training for foreign citizens at the initial stage of learning. After all, although the use of artificial intelligence in the educational system is a relatively new direction, it has significant potential. To truly understand its capabilities, it is important to understand the essence of artificial intelligence and the principles of its operation, as well as to be capable of working with it. Accordingly, this article considers the key definitions of artificial intelligence and its philosophical interpretations. The areas of this advanced technology application are also to be discussed.

Particular attention is paid to promising aspects of using artificial intelligence in language education, such as personalized and adaptive learning, knowledge assessment, intermediate testing, the use of gaming technologies (or gamification of the educational process), the development of other innovative approaches using programs and applications that are powered by artificial intelligence algorithms, significantly simplifying the learning process for both teachers and students.

### KEYWORDS

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Artificial intelligence, automated assessment, chat-bot, educational space, ethical use, gamification, generative AI, personalization.

### 8.1 AI-DRIVEN SHIFT IN EDUCATION: CURRENT VIEW OF THE PROBLEM

Since the beginning of the full-scale russian invasion, Ukraine has faced serious challenges in the field of education. Many students were forced to leave their educational institutions, especially in regions close to the battlefield, and move to safer areas of the country or even abroad. Higher education institutions located in these areas have switched to distance learning. This working mode had been first introduced during the COVID-19 pandemic in 2020–2021, when educational institutions were made to adapt to quarantine restrictions. Concordantly, the education of foreign students in the front-line regions became available only in the remote mode, as well, and such a transition created many new challenges for teachers of preparatory faculties and departments in Kharkiv, Sumy, Zaporizhzhia, Dnipro and other Ukrainian cities, because the success of mastering Ukrainian as a Second language largely depends on immersion in the

speaking environment, on the inevitable need to use a new language not only in the classroom, but also in everyday situations, communicating directly with native speakers. The impossibility of this in the conditions of distance learning, when a student continues to be in his/her native language environment, and therefore does not need to use a new language on everyday basis, led to a certain crisis, the result of which was low motivation of students, slow progress and lack of high-quality learning results. The crisis situation required introducing new methods of work in a virtual classroom, which would contribute to the improvement of digital skills among all participants of the educational process. This has also led to the need of creating and developing a digital educational space, including technologies related to artificial intelligence (AI).

To understand the key opportunities and approaches to integrating artificial intelligence into the educational sphere, it is important to consider the theoretical foundations of this concept. In the professional environment, the term "artificial intelligence" is not very wide-spread, the more accurate expression "artificial cognitive system" being more common. There are four main approaches to defining artificial intelligence. The first of them are focused on the degree of similarity of a digital system with the human mind, which can be expressed in the phrases "think like a person" and "act like a person". That is, artificial intelligence is a set of hardware and software tools that perform functions similar to the work of the human brain. The other two approaches, on the contrary, focus on rational thinking and behavior of the cognitive AI system [1].

The issue of introducing AI into the educational process is addressed by the studies of many contemporary scientists and educators. In particular, A. Androschuk and O. Maluga [1] outline the main directions and trends in the use of artificial intelligence in education, I. Viznyuk, N. Buglai, L. Kutsak, A. Polishchuk [2] and a number of other researchers focus their attention on the potential of introducing methods and AI-based teaching techniques into the educational process. S. Tolochko, A. Godunova [3], I. Drach [4], etc. explore foreign experience of such implementation, referring to successful examples of AI use in education and science in the United States of America, Canada and the countries of the European Union. While R. Berdo, V. Rasyun, V. Velichko [5], and O. Panukhnyk [6] focus on the ethical aspects of using AI in education.

However, we have noticed the absence of thorough methodological studies on the application of AI-powered technologies in language training, in particular, when teaching Ukrainian as a second language, although the co-author of this article N. Opryshko makes an attempt to outline this issue in the published abstracts of reports at several local and international conferences [7–9]. Therefore, this study is rather a systematization of the work done in recent years on the implementation of AI technologies and apps that work on its algorithms in the educational space at the preparatory department of the Scientific and Educational Institute of International Education in Cooperation at Kharkiv National Automobile and Highway University. Thus, the aim of this article is to consider the prospects for implementation of AI-based technologies in higher education institutions (HEIs) of Ukraine, in particular for training foreign citizens in the Ukrainian language. Reaching such an ambitious goal involves research on a number of objectives, among which the following can be distinguished: to sketch a brief overview of the concept of "artificial intelligence" and the history of its rise, assessing the rapid development of technologies based on artificial intelligence in the 2020-s and their direct implementation in the form of Generative AI; to outline methodological possibilities of using tools powered by the AI algorithms in foreign citizens' language training; to assess various

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ethical challenges related to uncontrolled AI use in the process of a second language training as well as to present a range of AI-powered solutions to some of them.

## **8.2 THE EVOLUTION AND IMPLEMENTATION OF AI IN HIGHER EDUCATION: FROM THEORETICAL ORIGINS TO PERSONALIZED LANGUAGE TRAINING**

The nature of artificial intelligence gives rise to many philosophical interpretations, but most often AI, or artificial intelligence, is defined as "the ability of digital devices to perform those tasks that are characteristic of intelligent beings" [10]. Yet, this is not just another achievement of technological progress at the beginning of the 21<sup>st</sup> century. Back in the 1950s, A. Turing proposed the idea that a system created by a person could be recognized as "intelligent" [11]. He developed an imitation test that allows you to assess whether a participant is able to determine whether they are communicating with a machine or a person. If differences are not detected, this indicates the presence of some form of intelligent system, i.e. artificial intelligence. In 1956, J. McCarthy at a conference at Dartmouth University presented one of the first and most significant definitions of this phenomenon, describing it as "scientific and technical methods for creating intelligent machines" [12], but for many years the real implementation of such technologies was considered a matter of science-fiction. Until recently, when the realization of those old ideas finally became technologically plausible.

Currently researchers outline three main components that gave impetus to the development of artificial intelligence in the 10s-20s of the 21<sup>st</sup> century. First, this is a large amount of processed and prepared data (working with which had been problematic before), second, complex algorithms for artificial intelligence, which are currently in the final stages of development, third, the power and memory of computers, finally sufficient for processing the former and operating the latter.

As for the potential for using AI in education, it is rather extensive: from improving inclusive education (serving students with special needs) to preparing young people for life in the world of artificial intelligence, and therefore – the formation of relevant knowledge, skills and abilities in students. An important element of such "learning for life" is the development of artificial intelligence algorithms that "could work in models of human teaching and learning" [13], which would not contradict the traditional education system, but could strengthen and improve it. Consequently, in the modern structure of education, communication with a human teacher, some educators believe, should include "the use of the latest gadgets and multimedia technologies, book learning, practical classes, the use of robots/bots and virtual reality tools, with which you can model the learning environment, should interact" [14]. Since artificial intelligence is used in various fields nowadays, such as medicine, management, education, linguistics, psychology, etc, educators become more and more interested in gaming applications, machine translation with voice input, visual content recognition, cognitive computing, and computer creativity. Thus, artificial intelligence encompasses many aspects of teaching and learning.

Even at present, artificial intelligence plays an important role in education. Progress in this area is associated with the active development of new technologies that open up new prospects for optimizing the

educational process, dramatically changing the structure of global higher education. In our opinion, promising areas of artificial intelligence application in the educational process of HEIs cover several aspects, such as: adaptive and personalized learning; automated knowledge assessment; intermediate testing and many others. Of certain interest there might be the interaction of educational process participants with various chat-bots, in particular with Chat Generative Pre-trained Transformer also known as ChatGPT. This chatbot was developed by OpenAI in 2022, and it almost immediately became very popular. Chat works on the architecture of the Generative Pretrained Transformer language model and can generate high-quality text similar to human speech. ChatGPT is trained on a very large amount of information available on the Internet, including websites, e-books, articles, news, etc allowing a high degree of personalization in any language training model.

Personalization of the educational system with its help is achieved through the choice of different methods of organizing learning, which allows adapting educational content to the individual needs of students. The system can create an individual educational profile that meets the abilities of each student and will ensure their regular progress. Learning goals, approaches, relevant content and sequence of the material presented may vary depending on the needs of every singular applicant. Within the framework of adaptive learning, artificial intelligence is used to identify gaps in the knowledge of each student and adjust the selection of educational material in accordance with the results of the analysis. All these measures are aimed at improving the quality of learning and developing intellectual interaction at the cognitive, behavioral and physiological levels.

Along with such a serious tool for acquiring language knowledge, skills and abilities, a powerful potential for use belongs to a notion that every modern young person has been familiar with almost since early childhood: a video game. Gamification of the educational process is a long-known and effective method for improving work in the classroom, especially when it comes to intensive study of a foreign language at the initial stage of training (with more than 30 academic hours of the same language a week, usually with the same teacher). However, in this case, we are not talking about the use of gaming techniques as such, but about the use of chatbots operating on artificial intelligence algorithms which are, in fact, gaming applications for any mobile device, helping students expand their vocabulary, improve phonetic and grammatical skills, as well as get the ability to accurately articulate sentences in both oral and written form.

### **8.3 A DIVERGENT MODALITY OF GAMIFICATION: POTENTIAL OF AI-POWERED CHATBOTS IN THE SECOND LANGUAGE TRAINING SYSTEM**

In the context of language training for students – and more broadly, the study of any foreign language – numerous applications for pronunciation practice, communication platforms, translation tools, and text generators already play a vital role. However, against this backdrop, the involvement of chatbots for the intensification and gamification of the educational process has not yet garnered sufficient attention from researchers and philology educators. This remains true despite the fact that resources like Character.ai could significantly influence the very concept of foreign language acquisition, fully or partially transforming its practical component into deeply personalized and creative communication with a virtual interlocutor.

By definition, a chatbot is a program that simulates real conversation with a user. Through chatbots, communication can occur via text or voice messages on websites, messengers, mobile apps, or telephone connections. Chatbots utilize machine learning algorithms to create communication scripts. Through constant interaction with humans, they learn to mimic natural conversation and respond to oral and written inquiries to assist in finding answers. Because they utilize artificial intelligence, chatbots understand natural language rather than just rigid commands.

Despite the modernity of AI technologies and conversational computer programs, the initial considerations regarding artificial intelligence – and attempts to evaluate its "intelligence" – date back to the early post-war years of the 20<sup>th</sup> century. In 1950, discussions began regarding a specific test to determine a machine's ability to demonstrate intelligent behavior identical to, or indistinguishable from, that of a human. This idea was proposed by the eminent British mathematician A. Turing in his article "Computing Machinery and Intelligence", published in the philosophical journal *Mind* [11]. In this imitation game, a human evaluator interacts with two unknown entities via a text interface. One interlocutor is a human, while the other is a computer program. The communication environment is restricted to text exchange, excluding visual and auditory cues. Based on the responses, the evaluator must differentiate the human from the machine. If the evaluator cannot identify the machine with reliable certainty, the machine is considered to have passed the test. In Turing's time, a machine's victory seemed like science fiction, and in the 1990s, a cash prize was even established for a chatbot that could achieve a successful result; today, however, almost any chatbot can overcome such a barrier.

Because chatbots utilize AI to communicate, they provide relevant content and suggestions regardless of the query, functioning either on a set of instructions or through machine learning. Instruction-based chatbot functionality is quite limited, as they are typically designed to answer fixed questions. Consequently, if a user poses a question in a way not foreseen by the program, the bot cannot respond coherently. Conversely, "machine-learning-based chatbots perform more effectively because they understand human language holistically" [15]. Users do not need to input exact keywords to receive relevant answers. Furthermore, the bot learns from human interaction and processes the most up-to-date information available online via built-in self-learning algorithms, allowing it to resolve similar situations in the future. Thus, every new dialogue improves the bot's communicative skills and, by extension, its intelligence.

In this interaction process, the student also learns by repeating and memorizing lexical units, grammatical structures, and idiomatic expressions. By mimicking precise pronunciation, accents, and intonation patterns, the student gains fluency and naturalness that are often difficult to achieve in traditional foreign language classes, regardless of the group's proficiency level.

Several effective chatbots have gained global recognition and are successfully utilized by language learners, including Duolingo Chatbots, Replika, Babbel Chat, HelloTalk, and English Chat by RobotSpeak. Simultaneously, chatbots created primarily for entertainment are gaining popularity among youth mastering a second language. Tools, such as Character.ai, as well as alternatives like NovelAI, TavernAI, Kajiwoto, and ChatFAI, can serve as instruments for educational gamification, providing practice in vital language skills through role-playing quests. Notably, "the scenario of content generation by a chatbot is more attractive for both the student and the teacher, as it lacks pre-prepared answers" [16]. In other words, the training

exercise resembles a first-person virtual role-playing game (RPG) but is even less dependent on developer presets, making it more spontaneous and unpredictable.

We would like to focus specifically on the methodological potential of Character.ai (also known as c.ai). This web application uses a neurolinguistic model to process and interpret vast amounts of text. The platform's functioning is based on creating and interacting with virtual characters. Users can create characters that are either fictional or based on real historical or contemporary figures. When creating an original character, the user can customize visual characteristics, voice timbre, opening remarks, and speech style. The platform also offers various interaction scenarios, including foreign language practice, travel planning, interview preparation, and creative writing. Additionally, users can select the complexity of speech and stylistic orientation (colloquial, general, academic).

This diversity of choice ensures that language learning shifts from a mandatory task to a form of entertainment. Since the bot is capable of both text and voice exchange, students practice all core skills necessary for fluent communication.

To demonstrate the effectiveness of this application, a methodological experiment was conducted at the Preparatory Department of the Kharkiv National Highway University in 2024–2025. Four international students (Control Group 1) volunteered to use Character.ai for role-playing in their free time alongside the standard Solutions A2 [17] curriculum. Another four students (Control Group 2) used only the standard curriculum. Examination results revealed that students in Control Group 1 improved their proficiency from an A1+ level at the start of the year to a remarkable B2 (and in one case, B2+) level, primarily due to systematic communication with the virtual chatbot characters.

This particular case study demonstrates that over the course of a single academic year characterized by the intensive use of the Character.ai chatbot, students exhibit significant progress in the development of their speaking skills. Specifically, there is a measurable "increase in fluency and accuracy of speech, as well as an enrichment of vocabulary with idiomatic expressions, which typically requires a much longer period of practice in traditional classroom settings" [8].

In the context of oral communication skills, voice-based interaction with Character.ai facilitates more than just the acquisition of specific accent models (such as British or American English); it also enables the rapid recognition of diverse accents, sociolinguistic variations, and geographical dialects. Furthermore, this technology assists in mastering appropriate intonational contours, pitch variations, speech tempo, and the characteristic features of connected speech, as well as the fundamental principles of phrasal stress and prosodic organization.

Regarding grammatical competence, artificial intelligence agents like Character.ai demonstrate high precision in reproducing grammatical structures, provided no specific instructions are given to deviate from linguistic norms. Even in cases where a user lacks formal grammatical training, intensive practice with Character.ai helps compensate for this deficit through the implicit acquisition of grammatical patterns within the context of communicative interaction, ensuring their subsequent correct application in various real-world scenarios.

A similar principle applies to the development of writing skills. Even without targeted writing instruction, users can internalize relevant models of written discourse through text exchanges with the intelligent

agent. This includes the acquisition of sequencers, connectors, discourse markers, personalization techniques, and the core principles of paragraph structuring.

In terms of evaluation, the chatbot's functionality does not inherently adapt to the role of a traditional tutor. However, depending on the type of interactive agent selected by the user during the initial phase, the system can provide – if not direct correction – at least some form of critical feedback. This feedback varies in tone from stern to sarcastic or humorous when the user commits significant communicative errors.

The analysis demonstrates that even a gaming-oriented platform like Character.ai possesses a substantial, yet under-researched, didactic potential capable of optimizing both pedagogical activity and the learning process for students. Simultaneously, the concept of the autonomous learner, which is extensively debated in current pedagogical discourse [18], does not preclude the need for instructional guidance. While students can independently assess their progress by comparing their communicative competence before and after interacting with an AI agent, expert teacher evaluation remains essential for ensuring a deep, professional analysis of achievements and identifying areas for further development.

Despite these considerations, within the framework of educational digitalization and the anticipated advancement of interactive chatbots, their role in distance, individualized, and creative language education is set to grow steadily, opening new horizons for foreign language acquisition. Undoubtedly, the use of chatbots in language teaching represents a promising frontier that necessitates further research. It is essential to conduct a more rigorous analysis of their methodological potential, develop effective integration strategies for the curriculum, and address existing challenges. This study serves as a preliminary stage in exploring the potential of chatbots in language training, with further research required to fully realize their capabilities.

#### **8.4 ETHICAL DIMENSIONS OF AI INTEGRATION IN LANGUAGE TRAINING**

Artificial Intelligence (AI) is rapidly transforming various sectors, and education is no exception. From adaptive learning platforms to AI-driven assessment tools, the potential benefits of AI in education are immense. In the context of language training – specifically second language acquisition in a foreign country – AI-based tools can become indispensable, particularly during crises, such as the one currently facing Ukraine. However, the deployment of these technologies raises profound ethical questions that must be addressed to ensure equitable and responsible implementation. Consequently, it is essential to outline the potential ethical complexities associated with AI in education, highlight potential pitfalls, and propose pathways for ethical development.

The primary ethical concern facing every educator, and language instructors in particular, is the issue of academic integrity. With the rapid advancement of generative language models capable of producing texts of varying complexity, the educational world faces unprecedented challenges. While plagiarism and cheating were traditional concerns, we now contend with tools that can "automatically" generate high-quality, logically coherent text that mimics human creativity. This new reality necessitates a re-evaluation of our conceptions of authorship, originality, and honesty in the academic environment.

Modern generative models, such as GPT-4 (OpenAI), Gemini (Google), and Claude (Anthropic), possess remarkable capabilities. They can draft essays, reports, articles, and technical documentation, often imitating specific authorial styles or academic genres. These capabilities transform AI from a simple tool into a potential "co-author" or even "sole author", leading to a "blurring of the boundaries of authorship" [19]. This raises controversial questions: Who is the author – the student who wrote the prompt or the AI model that generated the text? Furthermore, can a text generated by an algorithm based on millions of existing sources be considered "original" in the traditional sense? Because AI does not "understand" material in a human way but rather models probable word sequences, its output is often described as "quasi-creative" [9].

Beyond integrity, "an over-reliance on AI for text generation risks the degradation of critical academic skills" [20], including the following:

1. *Writing and Argumentation*: students may lose the ability to structure thoughts and express themselves clearly.
2. *Critical Thinking and Analysis*: AI does not replace the human capacity for deep synthesis and critical evaluation. A student who merely inputs a prompt bypasses the cognitive process necessary for learning.
3. *Research Skills*: relying on AI summaries limits a student's experience in independently searching for and interpreting primary sources.

This leads to significant difficulties for educators regarding objective assessment and may ultimately result in a loss of trust in the academic system, devaluing diplomas and qualifications on the labor market.

Another critical ethical risk is algorithmic bias. AI systems are trained on vast datasets; if these data reflect existing societal prejudices, the algorithms will inevitably inherit and amplify them. In an educational setting, this can manifest as unfair grading for specific demographic groups based on race, gender, or socioeconomic status. For instance, an automated essay-grading system might be less tolerant of grammatical structures common to second-language learners or specific cultural contexts.

Furthermore, AI may exacerbate the digital divide. Students from lower socioeconomic backgrounds or developing regions may lack the necessary hardware or connectivity, while differences in digital literacy within a single group can create further disparities.

A significant challenge in language training is the potential reduction of the teacher's role. While AI provides instant feedback and personalization, it lacks emotional intelligence, empathy, and intuition. A teacher serves as a mentor and motivator who can adapt to a student's individual psychological needs – qualities AI cannot replicate.

Language acquisition is not merely the memorization of rules but the development of the ability to communicate in real-world situations, involving humor, unpredictable dynamics, and non-verbal cues. Excessive reliance on AI risks producing a generation of "language users" who can "apply pre-set phrases but lack the creative flexibility" [21] to navigate genuine cultural nuances.

To mitigate these ethical risks, a human-centric approach is required. AI should be "integrated as a tool to support, rather than replace, the teacher" [22]. Educational institutions must develop clear policies regarding AI use, ranging from full disclosure requirements to the use of AI for specific tasks like brainstorming or grammar checking.

The integration of AI should aim for a "synergy between human experience and technological innovation" [23]. While AI can make language acquisition faster and more efficient, the modern educational community must not ignore the ethical complexities that accompany its rise.

## 8.5 PEDAGOGICAL RESPONSES FOR IDENTIFYING AI-GENERATED CONTENT: AN OVERVIEW OF CONTEMPORARY WEB-BASED TOOLS

The rapid advancement of artificial intelligence (AI) has led to the emergence of powerful text generation tools, opening new horizons across numerous fields, including education. While these technologies possess significant potential, they simultaneously challenge society regarding the authenticity of information, particularly within the academic environment. Consequently, there is a growing demand for means capable of distinguishing human-authored text from AI-generated content.

However, in the initial stages of learning Ukrainian as a foreign language, text generation tools can serve as useful aids for students. They can assist in creating simple phrases, formulating basic ideas, or generating sentence examples to enhance the understanding of grammatical structures. Nevertheless, it is crucial to recognize the boundary between educational assistance and unethical use – such as creating essays or other academic assignments without a proper grasp of the material.

In response to the increasing demand for content authenticity control, a range of online resources and services offering AI text detection functionality has emerged. This article aims to provide an overview of current online solutions in this field, examine their capabilities and features, and assist readers in navigating the landscape of synthetic content identification tools, considering the potential implications of AI-generated texts in the educational process.

The Landscape of AI Detection Tools is rather varied these days, giving teachers a chance to identify "a wide spectrum of internet resources with the capability to identify AI-generated text" [24]. Numerous developers offer both free options and a variety of premium platforms to determine the authenticity of academic or creative writing.

The wide range of free online resources include the following:

1. GPTZero: analyzes text for markers of AI generation.
2. ZeroGPT: utilizes specially trained algorithms to check texts without requiring payment or registration.
3. OpenAI's AI Text Classifier: a specialized GPT model that assesses the probability that a text was created via AI (e.g., ChatGPT).
4. GPT Detector (Writefull): specifically tailored for academic texts, providing a percentage-based probability of AI authorship [18].

More premium and comprehensive solutions are also available. Platforms, such as Copyleaks and Originality.ai, offer expanded features and higher precision in their paid versions, including detailed reporting and integration with other pedagogical tools.

But even with the current sophistication of these tools, they still have limitations and present certain reliability challenges. Regrettably, at the current stage of generative AI evolution and text verification

methods, "none of the existing tools provide absolute certainty regarding the origin of a text" [23]. Every resource, despite its advantages, is characterized by specific limitations.

For example, while the primary benefits of GPTZero, ZeroGPT, and the AI Text Classifier include their free availability and simple interfaces, they often suffer from low accuracy and a high rate of false positives compared to their paid counterparts. Similarly, tools like Writer.com's AI Content Detector and QuillBot's detection feature provide percentage scores for human authorship but must be used with an awareness of the inherent technological constraints of detection.

Among paid options, Originality.ai is currently regarded as one of the most accurate tools. However, its subscription-based model and the persistent risk of inaccuracies suggest it should be used in conjunction with other verification methods. Similarly, Turnitin – originally a plagiarism detection service – now provides educators with indicators of potential AI use. It is vital, however, not to rely exclusively on these scores but to "treat them as one piece of evidence within a broader assessment of academic integrity" [25].

Beyond automated tools, additional methods can assist in identifying synthetic content. Educators should pay close attention to a number of features and markers, such as:

1. Stylistic peculiarities (AI-generated texts often lack clarity, feel unnatural, or miss the nuance and complexity characteristic of human writing).
2. Source Verification (AI frequently hallucinates or relies on unreliable web data. Citations that "arouse doubt regarding their reliability or relevance" [26] can indicate AI use).
3. Inquiry-Based Validation (Asking students to explain the development of an idea or their research methodology can reveal whether the work was performed independently).

As noted by researchers N. Trang, A. Gatua, and A. Sang, "the application of a combination of these methods will facilitate more effective identification of AI-created texts and ensure the independent completion of academic tasks" [27].

In light of the current state of generative AI and identification methods, it is evident that no tool is perfect. AI detection services are in a state of continuous improvement, and their accuracy is not absolute. Therefore, human analysis remains paramount; detection tools should be used as a complement to a critical expert evaluation.

Furthermore, fostering academic integrity involves educating students on the principles of honest writing and the consequences of AI misuse. Designing assignments that stimulate original thinking and deep analysis is equally essential. Ultimately, a combination of these tools and strategies will ensure that students produce original, independent academic work.

## **8.6 NAVIGATING AI FEATURES ON EDUCATION-RELATED PLATFORMS**

Artificial intelligence-based tools have now become the standard for productivity. They help automate the daily teaching routine: from creating designs for presentations with educational material to automatically compiling minutes of online meetings. Therefore, the integration of current AI tools on various platforms and services related to education and the learning process has become quite expected: in various

applications that allow organizing online conferences, seminars and webinars, on numerous virtual whiteboards that have become an integral part of classes for many teachers around the world, and on multifunctional graphic content editors. Among all of the above, it is worth highlighting three Internet resources, the importance of which in modern education, including distance education, is difficult to overestimate.

Despite the proliferation, especially in the corporate world, of services, such as MTeams and Google Meet, and among teenage gamers, platforms, such as Discord, the focus of our review will be Zoom, the cloud platform for video communication and remote collaboration, which in the 2020s has become a global tool for hybrid work and distance learning. With the integration of the latest AI-powered components, Zoom has transformed from a simple service for calls and video-conferencing into a full-fledged assistant that allows the conference host (and in the context of the educational process, this is always a teacher) to maximize the benefit of the session. For example, the Meeting Summary function, which works on AI algorithms, is able to automatically create a summary of the conversation, breaking it down into topics and highlighting key decisions and next steps. On the one hand, this allows teachers or educational managers to analyze and evaluate the lesson after it was conducted, on the other hand, it allows students to use such notes as a lecture or seminar summary, in which the main points of the topic are already highlighted.

Along with the ability to video and audio record the lesson, the integrated AI assistant Smart Recording allows you to divide the recording into "smart chapters" so that, if necessary, the teacher or students can quickly isolate the necessary section of the class and work on or analyze it.

For students who, for certain personal or technical reasons (for example, a sudden power outage), were forced to miss part of the lesson, but still want to navigate the educational material upon returning, Ask AI Companion will come in handy. It allows you to privately ask the AI in the chat during the lesson what information was discussed during the student's absence, whether their name was mentioned, whether any intermediate conclusions were made or training tasks completed.

After all, the Compose tool helps the teacher quickly generate answers in the chat, which can become a real challenge without this kind of assistance in case of multiple questions during a lecture with dozens of students, or a seminar class, the pace of which is quite high due to the large amount of educational material to be covered. This cognitive technology can help in creating individual homework (oral or written task) based on the context of the conversation.

The next important element of modern distance learning is online (virtual) whiteboards. They are defined as "a tool for visual collaboration that allows you to structure information using virtual stickers, diagrams, drawings and text" [28]. A large number of them gained distribution and popularity in the early 2020s, including due to the lockdown caused by the spread of Covid-19. Such multifunctional virtual whiteboards as Twiddla, Scribblar, IDroo and Padlet are still actively used by teachers, including in Ukraine. Over the years, the listed services have significantly expanded their potential, including due to components that work on artificial intelligence algorithms. We suggest focusing on two examples of such boards where AI-powered elements are most useful.

Thus, the Miro virtual whiteboard (formerly RealTimeboard) uses Miro Assist as the main AI to turn a chaotic discussion (for example, the brainstorming or reverse brainstorming method used during the lesson, the "six hats" method, the "6-3-5" method, etc.) into a structured plan.

Among the useful functions of the AI-based Miro Assist, built into the board, we can highlight Clustering (AI is able to instantly group a large number of stickers according to similar ideas or mood), Content Generation (the teacher can ask Miro to create a mind map, diagram, or even a User Persona based on a single phrase in real time), Summary (automatic creation of a short report of all the ideas present on the board, including the pedagogical results derived from the lesson).

Today, the Miro virtual collaboration platform is integrated into Zoom along with other useful functionality, while its equivalent FigJam is part of the Figma ecosystem and also works on the principle of Infinite Canvas, which means that, unlike a sheet of paper or a presentation slide, the board space is not limited to the A4 format or the borders of the screen.

Among the AI-powered tools that simplify working with FigJam in class, we can single out Template Generation (the ability of artificial intelligence to instantly construct the logical structure of a document, board, or design, selecting appropriate visual elements, widgets, and information hierarchy at the user's request), Sorting (automatic sorting of stickers on the board into certain categories, similar to the AI-powered tool built into the Miro board), and Jambot (a widget based on ChatGPT that allows you to "communicate" with ideas or statements written on the board, expanding or simplifying them). The latter technology can become an indispensable assistant for students who find it difficult to master, for example, complex grammatical material when learning a foreign language).

However, quite often, when working in a virtual space, a teacher is faced with the need to "pre-visualize educational material" [29], when the tools available during the lesson (such as commenting elements in video conferencing platforms or pencils, markers, stickers and templates built into virtual boards) cannot create the necessary visual clarity, high-quality infographics, a clear presentation, etc. A way out of this situation is offered by numerous online platforms for graphic design, which allow you to create visual content without the need to install complex professional software, such as Adobe Photoshop, Illustrator and the like. These are such Internet resources as VistaCreate (formerly known as Crello), Adobe Express, a tool from the creators of Adobe Photoshop that does not require complex professional tools and skills, Pixlr, a kind of Photoshop in the browser, which is now actively transforming into a powerful AI instrument. However, it is the Canva service, created more than ten years ago (2013, Sydney, Australia), that has become the most widely used universal online visual content designer, making professional tools available to everyone, thus democratizing and simplifying the creation of any design. In the 2020s, Canva has turned into a real "ecosystem for visual communications" [28], which offers users more than 250,000 templates, on the basis of which they can create their own documents, interactive boards, task sheets, infographics, diagrams, presentations, posters, postcards, photo collages and posts for social networks.

Such extensive capabilities are provided, first of all, by the Canva Magic Studio integrated into the service, which works on artificial intelligence algorithms. The studio's goal is to enable people without an art education or advanced editing skills (very often this category includes educators, especially philology teachers who provide a second language training) to create professional visual content.

The main elements and tools of the Canva Magic Studio AI interface are Magic Design (based on an uploaded photo or text description of the idea, the AI offers ready-made design options for a presentation or educational video); Magic Edit & Eraser (AI independently selects and replaces an object in a photo or

simply deletes an unnecessary object based on a text description); Magic Expand (AI independently adjusts the edges of the image if it does not fit into the required format); Magic Media, also known as Text-to-Image/Video (AI generates unique image-illustrations or short educational videos right inside the editor) and Magic Switch (AI instantly transforms a presentation, automatically changing the format, and based on it creates a Word document or educational post for the teacher's or affiliated educational institution's social networks).

As we can see, artificial intelligence not only creates new opportunities to improve, facilitate and accelerate the learning process, but also improves online resources and solutions that have already become important components of the modern educational environment. AI tools integrated into them expand the possibilities of hybrid learning, making it more personalized and adaptive, ensuring the principles of equality and inclusion in the higher education system in general and second language training in particular.

## 8.7 DISCUSSION OF THE RESULTS OF SECTION 8

Overall, AI, or artificial intelligence, defined as the "ability of digital devices to perform tasks characteristic of intelligent beings" [24], is more than just another milestone of technological progress at the beginning of the 21<sup>st</sup> century. Like any contemporary innovation, it can and should be utilized across all spheres of life, including education. However, the implementation of such a powerful tool presents educators with more than just certain prospects, such as enhancing motivational components and student engagement, which ultimately leads to increased learning efficiency. By applying AI capabilities in the classroom, we also confront unpredictable and previously unknown challenges.

Researchers outline three primary components that catalyzed the development of artificial intelligence in the 2010s and 2020s. First is the vast amount of processed and curated data (which was previously problematic to manage); second is the complex AI algorithms currently in their final stages of development; and third is the computing power and memory capacity that have finally become sufficient to utilize the former two. The potential for AI in education is quite extensive: from enhancing inclusive education (supporting students with special needs) to preparing youth for life in an AI-driven world – thereby fostering relevant knowledge, skills, and abilities. A critical element of this "learning for life" is the development of AI algorithms that are able to operate within established pedagogical frameworks, meaning they do not contradict the traditional education system but rather strengthen and refine it. Therefore, modern educational structure must facilitate the interaction between human instruction, the use of cutting-edge gadgets and multimedia, book-based learning, practical exercises, the use of robots/bots, and virtual reality tools capable of modeling the learning environment.

There are also significant prospects for utilizing AI in the language training of international students and foreign citizens during the initial stages of education. Today, while it is premature to discuss the widespread integration of robotics or VR in standard classrooms, we can identify two primary aspects of AI utilization: the methodological and the strictly didactic. The former includes programs and tools that educators use when preparing lecture or seminar materials, presenting content, and reinforcing or monitoring the acquisition of knowledge and skills. Indeed, it is the rapid and reliable AI algorithm, capable of learning

from provided data, that can ensure the "selection of educational material that is optimal for the specific audience and curriculum, while remaining engaging and relevant to the student's future profession" [2]. For such tasks, one can utilize standard search engines as well as well-known tools like OpenAI's ChatGPT or its counterparts, such as Bing AI, Google Bard (Gemini), and Notion.so. Furthermore, tools like Google Forms effectively facilitate the assessment of knowledge without additional time constraints on the instructor, providing subsequent automatic systematization of results [13].

Despite its complexity and sophistication, AI is essentially a high-powered system of "pattern-matching" (R. Luckin) that is "intelligent only in a certain aspect" [30]. We can leverage this potential for purely didactic (educational) purposes, including in the language training of students. Various chatbots and AI-based programs designed to improve foreign language communication skills (such as the Character.ai application and its analogs) have already gained popularity. As I. Viznyuk notes, "Chatbots can be considered a promising tool because they can accompany each learner individually, according to their level and chosen pace of material understanding" [2]. Alongside these, numerous mobile applications for language learning (such as Duolingo) have long been used successfully, offering training across the full spectrum of language skills – reading, writing, speaking and listening. Their primary advantage lies in a "personalized approach to knowledge acquisition" [10], which enhances the student's intellectual productivity. It is also expedient and effective to work on learning platforms built on AI algorithms, such as Pearson's MyEnglishLab, which allow for the realization of core language training functions: cognitive, developmental, training, diagnostic, and communicative [10].

However, regardless of how or by whom AI is used in the educational process, the ethical dimension remains a true challenge. Its "quasi-creative" capabilities are vast, which can lead to violations of academic integrity; notably, standard plagiarism detection software often fails when dealing with AI-generated text. Therefore, educating students on the ethical issues associated with AI must hold a prominent place alongside understanding its nature and technical application, including AI-powered assistants which have been developed to simplify operation of various educational spaces and learning-related Internet resources.

This range of questions is currently relevant for both AI developers and educators worldwide. Only through the collaborative efforts of scientists and practitioners in these two fields can an effective, inclusive, and motivating learning environment be created that operates on the principles of academic integrity.

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## ARTIFICIAL INTELLIGENCE IN UKRAINIAN LANGUAGE TEACHING: MODELING AND APPLICATION OF THE EVALUATION POTENTIAL OF ADJECTIVES

Daria Riazantseva, Larysa Kokhan, Liudmyla Kokhan, Iryna Kushnir, Lyudmyla Prylutska

### ABSTRACT

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Professional talents and abilities of an individual are revealed through language means, therefore, perfect language proficiency is an important part of the professional training of modern professionals. In the modern world, artificial intelligence (AI) and various AI models and systems can act as an effective mediator for mastering various language means and understanding numerous grammatical constructions, features of the Ukrainian language. By penetrating the linguistic nature of different parts of speech, we deepen our knowledge of human cognitive activity. The basis of language use is the selection and generalization of signs of events and objects, and it is the adjective that plays an important role in the language system and the communication process, since it has a wide semantic scope, and knowing the signs of an object means knowing the object itself. By designating a feature, the adjective plays an important role in the language system and the communication process, and its evaluative value can be used both for effective teaching of the Ukrainian language and for teaching and designing AI models that can build a productive dialogue with a person and create useful scientific research, textbooks, articles, etc. The authors considers the features of the evaluative potential of adjectives in the structure of the Ukrainian language. Deviant forms of adjectives are presented through consideration of the semantic and grammatical features of adjectives of the Ukrainian language, analyzed from the point of view of pragmatics. The authors provides examples of various didactic scenarios for revealing the evaluative potential of the adjective by introducing neural network technologies into teaching the Ukrainian language and provides comments on the use of AI models in the structure of the Ukrainian language course in higher education.

### KEYWORDS

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Ukrainian language adjective, artificial intelligence, AI models, pragmatics, evaluative marking.

### 9.1 THEORETICAL AND METHODOLOGICAL PRINCIPLES OF STUDYING THE EVALUATIVE SEMANTICS OF ADJECTIVES

The main research unit of linguistic axiology is the linguo-philosophical category of evaluation, which is interpreted as a consequence of the linguistic expression of logical-philosophical evaluative judgments – "this is a category that cannot exist in isolation from any other philosophical category, since it itself is one of the most important and universal philosophical categories, without which it is impossible for a person to develop a correct orientation in the world, in society" [1]. Linguistic-philosophical categories are a categorical reflection of the world and human thinking, which is recorded in linguistic units, since it is in the linguistic

means of expressing evaluative values that the connection of evaluation with other linguo-philosophical concepts and categories is realized. The interpretation of this is provided by the study of language in its relationship with human consciousness and thinking.

There are a large number of philosophical problems related to the differentiation of evaluation and cognition itself, and in linguistics, questions arise about the means of implementing the category of evaluation, about the distinction between evaluative and non-evaluative statements, about the pragmatic significance of evaluative means, the specifics of their creation, formation, development, about the comparison of evaluative means of different languages, etc. In particular, studying the features of expressing the category of evaluation by grammatical means, scientists came to the conclusion that it is necessary to fully describe the so-called "grammar of evaluation", within which it is necessary to represent a comprehensive analysis of the grammatical means of expressing the category of evaluation, taking into account their pragmatics. We believe that it is necessary to comprehensively investigate the phenomenon of evaluativeness in language within the framework of the theory of functional grammar and to describe the entire system of evaluations and grammatical means of their expression.

The specifics of expressing evaluative meanings by means of language of its various levels have been studied by domestic and foreign linguists, in particular such as N. Arutyunova, A. Buryachok, A. Zagnitko, G. Zolotova, V. Ivashchenko, V. Kononenko, T. Kosmeda, V. Lopatin, T. Markelova, V. Nykytevich, I. Onyshchenko, O. Petrishcheva, S. Proskurkina, M. Retunska, O. Selivanova, O. Semenyuk, O. Stolyarova, V. Shynkaruk and others. However, the grammatical means of expressing the category of evaluation have been studied in Ukrainian linguistics insufficiently and fragmentarily, the mechanisms of the emergence of such meanings have not been consistently described.

At the current stage of the development of the Ukrainian language, in many lexemes we can trace changes in their semantic scope: an expansion of the semantic content of words and a narrowing of their use in direct meanings, which leads to the layering of figurative meanings (for example, metaphORIZATION of the semantics of relative and possessive adjectives) and, as a result, the acquisition of a qualitative evaluative meaning by such lexemes.

Studying the grammatical categories of a noun in interaction with the category of evaluation, O. Khaliman claims that the evaluation appearance mechanism of grammatical means lies precisely in the interaction mechanism of linguistic and philosophical categories [2]. Let us consider the process of grammaticalization of the category of evaluation in the projection onto the grammatical category of adjectives comparison degrees in the Ukrainian language, which is a direct consequence of the relationship and interaction of the evaluation category with other linguistic and philosophical categories.

As is known, all adjectives are based on a common semantic basis – the meaning of quality, which ultimately motivates their onomasiological task – to characterize, reveal the qualities, properties of objects in the world. The wide semantic scope of adjectives is natural also because in the objective, social and spiritual spheres there are much more properties, qualities, pragmatic and emotional assessments than the objects themselves, events, persons to whom they belong or are nominally attributed [3]. The object of close attention of domestic and foreign linguists is the linguistic possibilities of expressing various quantitative manifestations of the category of quality.

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Quality is also a philosophical category. The category of quality reflects "a certain degree of human cognition of objective reality" [4]. At the initial stage of cognition, the object of study is determined in the subject's imagination by some separate property or set of properties. Quality appears as a set of properties in sensory perception – first impressions appear, then something stands out, which becomes the basis for the development of quality. Quality as a philosophical category was first analyzed by Aristotle, who defined it as "specific difference", as "... that specific feature that distinguishes a given entity in all its originality from another entity belonging to the same genus" [5]. Thus, it is thanks to quality that each object in the world exists and is thought of as something separate, autonomous from other objects. Modern philosophers also define quality as a philosophical category, which is a form of reflection and a degree of knowledge of the objective certainty of things in the sphere of their immediate existence [6]. Based on the definitions of the category of quality by ancient and modern philosophers, we trace its connection with cognitive categories.

Cognitive categories are constructs of human consciousness that model our knowledge about the world and correlate them with knowledge models that are fixed in the structure of language [7]. Adjectives constitute a single array of sign lexemes, specialized for naming the most essential characteristics of objects, phenomena of the objective world. Their sign nature as linguistic representatives of the category of quality follows from the understanding of the onomasiological process as a mental and thinking operation aimed at isolating the relevant properties of certain objects in order to penetrate deeper into their essence and interconnection. As Z. Kharitonchik notes, "penetrating the linguistic nature of adjectives, we deepen our knowledge of human cognitive activity" [8]. I. Ogienko agrees with this opinion, and argues that "to know the signs of an object means to know the object itself" [9]. Epistemological activity of a person is also always accompanied by evaluation, and evaluation is evidence of the degree of knowledge of the world and is formed under the influence of such factors as the social position of a person, his/her worldview, level of culture, intelligence, moral development, age, life experience, compliance with the norms and principles of morality. Therefore, a person forms judgments about the properties and qualities of things, mainly from how they are reflected in his/her experience.

According to T. Kosmeda, the category of evaluation in language is, first of all, the result of the grammaticalization of the mental philosophical category, but it is a complex and multifaceted category, which is why its study in logical-semantic and psychological aspects gives impetus to linguistic research [10].

The philosophical interpretation of the category of quality, which is the basis for the expression of evaluative values, is associated with the grammatical category of comparison degrees. The ability of human experience to accumulate and generalize objective knowledge about the quality of objects through repeated contacts with them makes it possible to compare and contrast the qualities of objects with each other – "comparison and juxtaposition are inherent in human nature itself, include operations of synthesis and analysis, and are integral components of human existence" [11].

## 9.2 THE EVALUATIVE POTENTIAL OF THE ADJECTIVE AS A PART OF SPEECH

At the current development stage of the Ukrainian language, there is an activation of certain grammatical categories intended for the enhanced expression of evaluation, impression, in particular, the formation of

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comparison degrees of adjectives and adverbs from relative, possessive, ordinal adjectives or from qualitative adjectives, which are called ungraded features. Reflections on the signs of grading features by adjectives of different lexical and grammatical categories are given by Yu. Karpenko – "if you think about it, then in our world there is nothing but objects – real or imaginary (virtual) and features, signs of these objects. Features can be established, static, expressed mainly by adjectives (the guy is smart, the guy is stupid), and dynamic, rapidly changing, transmitted mainly by verbs (the guy eats, the guy sleeps). But both are features of objects. There is nothing else in the world. And gradation – the volume, the measure of manifestation of a feature – cannot be its most essential property. Essentially, all other grammatical categories of adjectives (gender, number and case) are simply a reflection of the corresponding features of the subject – the noun. But the expression of degree – ordinary, higher, highest (or first, second, third and, not excluded, fourth) – is an organically inherent grammatical category of adjectives, long associated with qualitative adjectives. Now it is increasingly penetrating into relative adjectives, which at the same time acquire a qualitative coloring" [12].

Violation of the language norm can occur due to the action of two factors: intralinguistic and extralinguistic. Among the extralinguistic factors that cause a change in language norms, the following are distinguished (according to O. Styshov [13]):

- democratization of all branches of social life. This means that the literary language expands its functions, colloquial vocabulary is activated;
- weakening or absence of censorship;
- the official status of the Ukrainian language, which leads to the active use of the capabilities and resources of the national word-formation system;
- the search for new means of influence by the media and advertisers;
- "fashion for words", which reflects the aesthetic tastes of a certain era.

As for intralinguistic changes, the grammatical system of the language is also in a state of constant movement. The focus of attention of modern scientists (T. Kosmeda, O. Khaliman, F. Batsevich, V. Sannikov, Zh. Koloiz, L. Folkmar) is the grammatical norm, which unites morphological and word-formation samples of the literary language. Morphological ones include, for example, case forms, number forms, gender, comparison degrees, type, etc.

The paradox of the existence of grammatical rules is that the concept of a norm does not exist without violations of norms. Errors are a natural phenomenon in various types of activity. Language errors are the result of a complex interaction of various factors or processes, so their study helps to better understand the interaction of a person's thinking and speech processes. Various speech deviations from the norm reveal its nature and patterns of functioning, the direction of changes that it experiences. The so-called "negative speech material" can serve as the background, against which the mechanisms of combining thought and word are more clearly revealed, errors allow us to more clearly outline the norm and explore new speech phenomena [14].

The main violation of the language norm in the sphere of the adjective functioning in the modern Ukrainian language is the formation of comparison degrees from relative and possessive adjectives. In general, the category of comparison degrees in the Ukrainian language is "one of the most complex grammatical categories, with which semantic, syntactic, morphological, word-formation and pragmatic characteristics of the word are associated" [15].

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The form of the comparison degree of an adjective, which does not correspond to an adjective of a certain lexical-grammatical category, is filled with evaluative content. Under the semantic influence of the context, both the lexical and grammatical meaning of the word changes, that is, in accordance with the requirements of a certain communication sphere, the corresponding semantic and grammatical meaning in the word are neutralized or actualized. Changes in the functioning of the word generate its new grammatic characteristics, which, accordingly, causes certain shifts in the paradigm of its morphological categories [16]. The formed neologisms comply with the laws of form construction, but contradict the laws of language. They express specific semantic shades, different from those inherent in their original category.

According to I. Kononenko, the speech semantic structure of an adjective is significantly different from its linguistic structure. In contextual conditions, the order of the structure components can change, certain semes and sememes are actualized, and semes can change their status and move to another category [17]. Raising the potential seme to the rank of differential is the semantic content of the process of transferring the meaning of the word. There is an expansion of the semantic content of words and a narrowing of their use in direct meanings, which leads to the layering of figurative meanings (metaphorization of the semantics of relative, possessive and ordinal adjectives) and, as a result, the acquisition of qualitative evaluative meaning and corresponding expression by such lexemes.

The grammatical meaning always accompanies the lexical [18], therefore, in the process of constructing the forms of comparison degrees of adjectives from nouns on the basis of non-compliance of their use with the norms of the Ukrainian language, the use of atypical word-forming models, an assessment and additional expression are generated, because when expressing one's opinion or talking about certain events, a person cannot completely abstract from his/her attitude to what is being expressed and one way or another expresses his/her assessment. By attaching a word to a certain phenomenon, a person not only names this phenomenon, an object, but in the word itself just expresses his/her attitude towards it: "Words are in continuous connection with all our intellectual and emotional life... The word is both a sign of the speaker's thought and a sign of all other mental experiences that are included in the tasks and intentions of the message" [19].

Violation of the correlation of the lexical-grammatical category of an adjective with the feature expressed by it causes the emergence of secondary shades of meaning in relative, possessive and ordinal adjectives. The metaphorical use of grammes of comparison degrees realizes the potential possibilities inherent in the language system and is an effective means of generating the semantics of evaluation, demonstrating its gradation in the grammatical category of comparison degrees. The conscious choice of grammatical means made by speakers, the inconsistency of the lexical-grammatical category with the quality denoted, which is a violation of language norms, is certainly a reflection of the worldview formed in this society.

Let us try to explain the peculiarities of the process of grammaticalization of the philosophical category of quality in projection onto the linguistic level, namely – lexical-grammatical categories of adjectives and the process of acquiring qualitative meanings by relative adjectives, which leads to the construction of non-normative forms of comparison degrees from the standpoint of modern philosophy. The qualitative marking of an object depends primarily on its structure, the nature of the connections between the elements of the

whole, as well as the composition of its elements. A change in quality is caused either by a restructuring of the connections between the elements, or by a change in the elements themselves, or by a change in both of them. The world does not consist of completed and unchanging things, it is "a set of processes, in which things constantly arise, develop and perish, and pass into other things that have different qualities" [20]. Since, due to its qualities, an object acts precisely as given, and not another, a change in quality means the transformation of a given object into another. At the same time, qualitative changes in a thing can be associated with a change in what is specific to a given specific object or to all objects of a given class. With any qualitative change, there is a more general, and at the same time a deeper level of the quality of the object, which remains the same in essence: only the variation of its existence changes. Thus, a qualitative change can also be associated with the transformation of a given phenomenon into another, with a change in the state and form of existence of the same, in essence, object.

Analyzing the philosophical law of the transition of quantitative changes into qualitative ones, Hegel wrote that "quantitative changes, which seem innocent, conceal a trick, behind which qualitative changes are contemplated". The transition of quantitative changes into qualitative ones or the change of one qualitative state to another is called a "leap" in philosophy [19].

Thus, the grammatical category of comparison degrees is associated with the philosophical category of quality, which, being grammaticalized in language, expresses a certain degree of human cognition of objective reality. At the present stage of language development, there is a violation of the correlation of the lexical-grammatical category of an adjective with the feature expressed by it and non-normative gradation forms of adjectives, constructed as a result of these processes. There is an emergence of secondary evaluative shades of meaning in relative, possessive and ordinal adjectives. The metaphorical use of grammes of comparison degrees reflects the potential possibilities inherent in the language system and is an effective means of generating the semantics of evaluation, demonstrating its gradation in the grammatical category of comparison degrees – "in specific speech acts, extralinguistic knowledge is expressed mainly using language mechanisms: possible combinations of linguistic meanings, their metaphorical use, variation of context, etc." [1]. The above-described connection of evaluation with other philosophical categories and concepts explains the features of its embodiment in the grammatical category of comparison degrees of adjectives. Thus, the adjective occupies a central place in the system of evaluations, and the evaluative semantics of adjectives belongs to a little-studied aspect of axiological research.

### **9.3 ARTIFICIAL INTELLIGENCE IN LINGUISTICS: EVOLUTION AND MODERN TRENDS**

The research of artificial intelligence in education, the use of AI tools and their impact on language learning is made in scientific investigations by domestic and foreign scientists: O. Borodienko, I. Drach, O. Bazelyuk, N. Bazelyuk, I. Regeilo, O. Slobodyanyuk, I. Gorbenko, S. Horchynsky, M. Sofilkanych, A. Androschuk, I. Leontieva, O. Malyuga, S. Domnich, N. Makogonchuk, K. Peven, N. Khmil, M. Burlak, Yu. Grinova, A. Kilchenko, F. Araya, R. Wall, J. Wu, H. Huang Choi and others. As the authors state [21], "the effective development of the modern economy and production in the world and in Ukraine is impossible

without a sufficient number of highly qualified specialists capable of ensuring this progress. To train such specialists in higher education, it is necessary to use appropriate educational technologies and artificial intelligence, which makes learning more flexible and individualized".

The Cabinet of Ministers of Ukraine approved the "Concept of Digital Education and Science" [22], which presents a comprehensive strategic vision of the digital transformation of education and science and provides a clear vision and strategy for implementing this transformation. The document complies with the basis of implementation by executive authorities of the state policy principles of digital development, which was approved by the Resolution of the Cabinet of Ministers of Ukraine dated January 30, 2019 No. 56.

Let us consider the evolution of the technology use in language teaching. This is the path from simple electronic manuals to complex intelligent systems that are able to adapt educational content in real time. The use of computing tools in linguistic didactics has a long history, starting from the 1960s, when the direction of Computer-assisted language learning appeared. At this early stage, computers acted mainly as tools for automated testing, playback of audio materials and organization of mechanical training of vocabulary and grammar. CALL systems performed the role of an "electronic textbook", without significantly affecting the pedagogical paradigm.

The key moment that changed this paradigm was the transition to Intelligent computer-assisted language learning (ICALL). Unlike CALL, ICALL systems began to use elements of artificial intelligence to model the student's knowledge and expert knowledge about the language. This allowed the development of adaptive curricula that could provide personalized feedback, simulate dialogue and dynamically change the complexity of tasks. During the development of ICALL, the first attempt was made to apply natural language processing technologies to analyze student errors not only at the surface (syntactic) but also at the semantic level.

The current development stage of linguodidactics is marked by the use of deep learning technologies and large language models. These innovations have provided a qualitative leap in the ability of computers not only to process, but also to generate natural language. Models based on the Transformer architecture demonstrate unprecedented potential in understanding the context, detecting subtle semantic nuances and even analyzing the emotional tone of the text (in particular, the GPT chat uses the aforementioned technology).

The relevance of introducing AI into the study of the Ukrainian language is due to the need to individualize the educational process and increase the requirements for the quality of speech competence. Traditional teaching methods often do not allow for a qualitative diagnosis of the subjective evaluative potential of adjectives, since assessing the correctness of their use requires pragmatic and contextual analysis, which is resource-intensive for the teacher.

Artificial intelligence offers unique applications for linguistic didactics that go beyond simple grammar checking:

1. Diagnostics of semantics and pragmatics: AI systems trained on large corpora of the Ukrainian language can determine the contextual adequacy of the use of evaluative adjectives, identify subjective assessments and track their dynamics in the texts of students.

2. Personalization: Based on diagnostic data, AI can create individual learning trajectories, offering exercises specifically for those groups of evaluative adjectives that cause difficulties for a particular student.

3. Automated feedback: Students receive instant, objective and detailed assessment of their written work regarding lexical diversity and accuracy of expressive statements.

In the context of studying the evaluative potential of adjectives, AI tools become not just auxiliary tools, but a key methodological component. They allow moving from a qualitative description of evaluative vocabulary to its quantitative modeling, which is a necessary condition for the formation of a new, scientifically based didactic model. This emphasizes the feasibility of using complex AI models to ensure high diagnostic accuracy and effective integration of linguistic knowledge into the educational process. The evolution of educational technologies, especially the rapid development of artificial intelligence, opens up fundamentally new horizons for language learning. This technological revolution makes the process of language acquisition more flexible, deeply personalized and universally accessible. Due to its ability to quickly analyze large data sets, AI has exceptional potential for adapting educational content, offering each student an individual development trajectory [23]. This transformative ability of AI significantly increases the efficiency and interactivity of language training. [24] identifies the following categories of AI tools in language learning:

1. Language translators and chatbots: They simulate live communication with native speakers or virtual interlocutors. This creates a conducive environment for speaking and listening practice, which in turn allows students to improve pronunciation, intonation, and fluency with minimal stress.

2. Adaptive platforms: These are systems that dynamically change the difficulty and type of tasks according to the user's current level of knowledge and progress, providing a truly personalized educational process.

3. Interactive exercises: Such tools provide instant feedback on grammar and vocabulary, allowing students to quickly identify and correct their mistakes.

4. Speech recognition programs that allow students to practice their pronunciation and receive immediate feedback [25].

5. Pronunciation trainers that help students improve their pronunciation and intonation by offering them targeted exercises [26].

6. Translation tools that allow students to translate text or language in real time, which can be useful for conversational practice [27].

7. Speech synthesis tools that allow students to listen to the text they are reading, which can be useful for developing their listening comprehension skills [28].

8. Interactive learning platforms that provide students with a personalized learning experience by offering them relevant materials and tasks [29].

These tools make the language learning process efficient and effective, as a result, the teacher's priority becomes to provide students with advanced resources and support aimed at maximizing their language potential. However, AI tools also have disadvantages, including: the lack of live human communication, cost, technical complexity of use, etc. We have analyzed potential dialectical scenarios for learning the Ukrainian language adjective and its evaluative potential using AI systems. Let us consider them in more detail.

#### 9.4 IMPLEMENTATION OF AI SYSTEM IN THE EDUCATIONAL PROCESS OF STUDYING THE ADJECTIVE OF THE UKRAINIAN LANGUAGE AND ITS EVALUATIVE POTENTIAL: DIDACTIC SCENARIOS

Modern philological education, especially in the context of the Ukrainian language, is faced with an urgent need to introduce innovative methods that can ensure not only the formal assimilation of grammatical rules, but also a deep understanding of the stylistic and semantic nuances of the language. The adjective, as a part of the language, has a colossal evaluative potential, which is often underestimated in the traditional approach to learning, which is reduced mainly to declension and agreement. The feeling of lexical appropriateness, stylistic accuracy and emotional coloring that the adjective provides requires tools that can analyze the text not just at the word level, but at the context level.

It is here that artificial intelligence, in particular, specialized neural network systems, opens a new era of didactics.

The implementation of an AI system focused on the analysis of attributive structures allows transforming teaching, moving from mechanical checking to formative assessment with an emphasis on self-correction. Let's consider the first didactic scenario that focuses on this aspect. A student is asked to complete a creative task, for example, to write a detailed description of a painting or character, where the use of adjectives is key. In the traditional model, the teacher would check this work after a few days, providing only general comments. Instead, the AI system integrated into the learning platform works as an interactive assistant in real time. The system does not simply highlight grammatical errors, but uses a multidimensional approach to assessment. If a student uses the adjective "big" five times in a row, the system instantly classifies this as a low score according to the lexical diversity criterion. What appears on the screen is not a dry sentence, but a thought-provoking recommendation: "Try using more expressive synonyms: 'majestic', 'bulky', 'massive'". In this way, the student receives instant, unemotional feedback that turns an error into a learning opportunity and develops his/her ability to make conscious corrections. The goal of this approach is to teach the student to see how his/her choice of vocabulary directly affects the quality and style of the text, which is impossible with a deferred, overall assessment.

The second important scenario concerns the work of the teacher with the whole group, namely – diagnostics of weak points and adaptation of the curriculum. Checking a large number of written works, especially for stylistic and lexical shortcomings, is extremely time-consuming. The teacher is often forced to rely on general impressions. In this context, the AI system becomes a powerful tool for business analysis for education. After loading a large array of student works, the system aggregates the data, revealing collective trends of errors that may not be noticeable during individual checking. For example, the system may find that 75% of students in a given group systematically make mistakes in coordinating adjectives of the soft group (for example, "an old house"), or that most students avoid using complex adjectives, preferring only simple definitions. Having received such a statistical report, the teacher can not waste time on repeating the material that the students have already mastered, but purposefully devote the next lesson to spot-correction of the most problematic topics. This dramatically increases the efficiency of teaching time and allows the teacher to focus on creative, discussion or individual consultations, delegating routine diagnostic functions to machine intelligence.

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The third scenario reveals the greatest potential of AI in studying the evaluative function of an adjective and stylistic skill. Adjectives of the Ukrainian language are able not only to describe, but also to emotionally color the object, convey the author's attitude. To develop this feeling, students are offered tasks for comparative stylistic analysis. For example, a student is asked to describe the same object – an evening forest – first in a scientific style (using neutral, relative adjectives), and then in an artistic style (using epithets, metaphorical and emotionally saturated adjectives). The AI system here acts as an arbiter of stylistics. In a scientific text, it automatically lowers the score for the use of adjectives with a bright emotional coloring ("charming", "terrible"), encouraging neutral meanings ("coniferous", "temperature"). In contrast, in a literary text, the system requires a high index of lexical uniqueness and positively assesses the use of evaluative adjectives. This teaches the student to consciously use the adjective as a tool for manipulating the reader's attention and forming the tone of the text. Another task may be aimed at changing the emotional coloring of a finished neutral text. The student must rewrite the text using adjectives that give it an exclusively positive or negative tone. AI analyzes the total "emotional vector" of the text and compares it with the given goal, confirming or denying the success of the stylistic maneuver. Thus, students do not simply study the adjective as a grammatical unit, but master it as a powerful rhetorical tool. The integration of neural network technologies into education, especially in language teaching, ceases to be a futuristic idea and becomes a practical tool that ensures high-quality, objective, and adaptive learning of the Ukrainian language.

The modern educational paradigm requires not only effective teaching methods, but also objective and fast tools for assessing academic achievement. A particular difficulty in language teaching is the assessment of attributive structures (in particular, the use of adjectives), since it requires a deep understanding of the context, stylistic appropriateness, and grammatical correctness. Traditional testing methods are laborious and subjective.

In response to this challenge, the integration of a specialized artificial intelligence (AI) architecture into the didactic process is proposed. We propose to consider the architecture of an AI model that can be used for automated assessment of the correctness and stylistic accuracy of the use of adjectives and didactic scenarios for implementing an AI system.

The proposed system uses a multilayer neural network focused on natural language processing. The model does not just check spelling; it performs semantic and grammatical analysis of adjectives in the context of a sentence. A combination of two architectures is used to achieve high accuracy. Contextualization module (BERT-like transformer): This module is responsible for encoding the entire sentence. It analyzes the relationship between the adjective and the noun, to which it refers (attributive function), as well as the contextual influence of other words. It helps determine the lexical relevance of the adjective according to the noun and provides a vector representation of the adjective containing deep semantic information. The resulting contextual vector is fed to the input of this module, which performs classification according to several criteria. The adjectives are evaluated according to four main indicators, each of which forms part of the final score:

- grammatical correctness (40%): checking the agreement of the adjective with the noun in gender, number and case and assessing the correctness of word formation;

- stylistic accuracy (30%): determining the appropriateness of using the adjective in a given style of text (scientific, journalistic, artistic, etc.). The model learns to recognize clichés and excessive use of simple, unoriginal lexemes;
- lexical diversity (20%): analyzing the number of unique adjectives in the text compared to the total number of words. Encouraging the use of synonyms and antonyms;
- semantic appropriateness (10%): assessing whether the adjective enhances the meaning of the noun, whether it is redundant or contradictory (for example, the use of metaphors). We have built three possible didactic scenarios for implementing the AI system.

The first scenario contains elements of rapid assessment and instant feedback from the teacher to the students and can be implemented as follows: in the classroom lesson, the material is practically consolidated or students work independently. The goal of the work is to develop self-correction skills and in-depth mastery of grammatical rules. Students write short essays or descriptions (for example, "Description of their hometown", "Portrait of a historical figure"). The role of AI in the lesson is as follows: the system analyzes the text in real time. Unlike traditional checking, AI does not simply indicate an error, but provides multidimensional feedback for each of the four criteria (grammar, stylistics, diversity, appropriateness). For example, to correct the error "красивуї будинку", the system highlights the word and suggests: "Grammatical inaccuracy: gender mismatch. Try changing the ending or noun." The didactic effect of this scenario is as follows: the student instantly sees his/her weaknesses and independently corrects them, turning the mistake into a learning opportunity.

The second scenario can act as a diagnostic of the group's weaknesses and be used during the verification and analysis of test papers or large creative tasks. The purpose of the work is to adapt the curriculum to the needs of a specific group. Students write test papers, complete tasks, and after checking 30–40 works, the AI model aggregates data and provides the teacher with a statistical report on incorrect agreement of adjectives in the plural (with the percentage of errors in the group); excessive use of evaluative adjectives (for example, "good", "bad") instead of descriptive ones (also with the percentage of errors in the group). The didactic effect of this scenario is as follows: the teacher will receive objective data that will allow him/her not to waste time checking obvious things, but to focus on the most problematic topics of the group.

The third scenario can be used during the verification of homework and for personalized learning. Its goal is to develop in the student skills that require improvement, according to his/her profile. The role of AI in the lesson is as follows: the system, having detected that student "A" has excellent grammar, but low lexical diversity (always uses 5-7 basic adjectives), automatically generates a task for him/her: "Describe the evening landscape, using only rare synonyms for the adjective "old". For student "B", who has a rich vocabulary, but often makes grammatical errors, the system generates exercises on the conjugation of complex adjectives. The didactic effect of this scenario is as follows: the teacher will be able to personalize the task for each student by providing tasks built taking into account the potential of each student.

Thus, the integration of neural network technologies for automated assessment of attributive structures is a powerful tool for modernizing the educational process. The hybrid architecture of AI ensures objectivity and multidimensionality of assessment, going beyond simple grammatical correctness to the analysis of stylistics and semantics. The implementation of AI systems allows the teacher to save time for creative work and provide students with objective feedback, which promotes active self-correction. Thus,

AI acts not as a replacement for the teacher, but as an intelligent assistant that improves the quality of assessment and contributes to more adaptive and effective language learning.

## **9.5 DISCUSSION OF THE DEVELOPMENT PROSPECTS AND ETHICAL ASPECTS OF THE USE OF ARTIFICIAL INTELLIGENCE IN THE STUDY OF THE EVALUATIVE POTENTIAL OF ADJECTIVES IN THE UKRAINIAN LANGUAGE**

The functional-pragmatic orientation of modern linguistic research has opened up opportunities for studying new aspects of the category of evaluation, in particular, the study of the functional specificity of grammatical units. The modern development stage of the Ukrainian language is marked by the activation of certain grammatical categories intended for the enhanced expression of evaluation, impression, in particular, the formation of comparison degrees of adjectives and adverbs from relative, possessive, ordinal adjectives or from qualitative adjectives, which call an ungraded feature.

The functioning in the Ukrainian language of non-normative metaphorized forms of the comparative, superlative and elative constructed from qualitative, relative, possessive and ordinal adjectives and nouns is characterized by certain features. These features are associated with the individual search, selection and construction of word forms, which are the result of the complex interaction of cognitive, communicative and pragmatic components of the expression. This selection process is colored by anthropocentric marking, determined by the features of the axiological system of each artist – "the artist's associations are always multi-valued, multi-layered, multi-faceted and are grounded in an emotional-subconscious basis that participates in their formation" [18]. Any violation of the norms is dictated by the author's desire for new speech expressiveness, the implementation of relevant communicative tasks. In order to achieve specific pragmatic goals, the formal indicators of traditional, fixed by the language system for this or that morphological class of grammes change, which causes the emergence of new random grammatical modifications, the actualization of potential axiological semes, the emergence of multi-vector semantic associations. Unusual graduated forms of adjectives in the fabric of a poetic work become, due to the specificity of their meaning, exponents of the subjective-figurative reflection of the surrounding world, which is one of the defining features of poetic speech.

The adjective as a part of speech with the greatest evaluative potential attracts the attention of many researchers. The analysis of the interaction of the philosophical category of quality with the category of evaluation in the projection onto the grammatical categories of the adjective makes it possible to explain the grammaticalization features of the philosophical category of quality in the projection onto the linguistic level.

A broad approach to understanding the adjective as a part of speech used in the work involves the division of adjectives into five groups – qualitative, relative, possessive, ordinal and pronominal adjectives, each of which has its own lexical, semantic and grammatical features.

There is no unanimous opinion among linguists regarding the status of the category of comparison degrees of adjectives and the grammes of the superlative, elative and comparative. However, most linguists classify this category as a morphological-syntactic-word-formation category of an adjective, since among other morphological-word-formation categories (categories of an absolute measure of quality and categories of subjective

assessment), only it is associated with semantic-syntactic valence (graded words act as the main semantic component of an elementary sentence and require filling open positions with appropriate contextual partners).

The ordering and systematization of linguistic means of explication of the semantics and grammar of the comparative, superlative and elative forms allows for a thorough study of complex grammatical phenomena, one of which is the above-mentioned grammes. The study of grammes of comparison degrees, based on the principles of systemic and functional approaches, seems promising, since it allows us to look at traditional debatable issues of grammar related to the structural, semantic and syntactic features of words with the semantics of comparison from a new perspective.

Artificial intelligence has become one of the key tools in modern methods of learning foreign languages. Its use allows you to automate the learning process, increasing its efficiency. Thanks to machine learning algorithms, you can create personalized learning programs that adapt to the individual characteristics of each student, their level of knowledge and the pace of learning the material [30]. This allows you to make learning more flexible and productive.

## 9.6 DISCUSSION OF THE RESULTS OF SECTION 9

The results of the conducted research and practical modeling of didactic scenarios focused on the use of neural network technologies indicate that the introduction of AI tools in teaching Ukrainian as a foreign language significantly intensifies and increases the effectiveness of the learning process. The emphasis on studying the evaluative potential of language units, in particular adjectives, as well as the analysis of atypical, deviant forms of their use (such as gradation from relative or possessive adjectives), allows creating conditions in the classroom that are as close as possible to the real communicative environment in the Ukrainian language. This is ensured by the ability of the AI model to provide students with detailed, multidimensional feedback on grammatical correctness, lexical diversity and stylistic accuracy of expression. However, we emphasize that the integration of the AI system into the educational process should be purposeful and didactically justified, so as not to replace the teacher, but to strengthen his/her capabilities.

The formation of students' communicative skills by studying the evaluative potential of language units, in particular adjectives, as well as studying the use and understanding of such atypical, deviant forms (such as non-normative gradation) allows us to create conditions that are as close as possible to real language communication in Ukrainian. In order to increase students' interest and, as a result, increase the effectiveness of learning the Ukrainian language, we have developed and described a system of tasks for foreign students at each stage, based on the integration of a hybrid neural network model and have provided three possible didactic scenarios for implementing the AI system with a brief analysis of each and the possibilities of its implementation in real Ukrainian language lessons.

Given the relevance of this topic, we consider it necessary to continue developing research that will increase the effectiveness of using AI models in learning the Ukrainian language, make the learning process more interesting and diverse, and contribute to improving the cognitive activity and educational level of future specialists.

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## FORMING THE BUSINESS COMMUNICATION CULTURE OF FUTURE BANKING BACHELORS BY MEANS OF TRAINING TECHNOLOGIES IN THE DIGITAL EDUCATIONAL ENVIRONMENT

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### ABSTRACT

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The issue of forming a professional culture, and in particular a culture of business communication, requires special attention and study, since professional education involves not only mastering knowledge and skills for performing specific work in a certain profession, but also a high general cultural level, a broad professional outlook and professional interests that form the ability to creatively and effectively solve production tasks. Taking into account modern educational realities, digitalization is gaining momentum, therefore one of the means of information and communication technologies that creates a modern digital learning environment is the Moodle system, which makes it possible to organize a full-fledged educational process. The Moodle system has functional capabilities for using training technologies in the educational process aimed at forming a professional culture and a culture of business communication of a future banking specialist. The scientific work proves that modern training technologies used in classes in the humanities showed positive dynamics in formation levels of the business communication culture and professional culture of higher education applicants.

### KEYWORDS

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Professional culture, business communication culture, higher education institution, digital educational environment, training technologies.

### 10.1 DIGITAL EDUCATIONAL ENVIRONMENT OF A HIGHER EDUCATION INSTITUTION

The educational environment of a higher education institution should be aimed at providing high-quality professional education and training of highly qualified specialists capable of being competitive in the labor market.

According to the requirements of the legislation and standards of higher education, it is necessary to create an educational environment, under the influence of which the process of socialization, general cultural and professional development of a young person, the development of the professional culture of a future specialist takes place, in a higher education institution.

The educational environment surrounds the student throughout the entire period of study and affects the level of his/her self-identification as a person.

Creating an educational environment in a higher education institution where a future specialist would have the opportunity to acquire skills for future professional activity, develop abilities and aspirations for

professional self-realization and self-improvement is a priority direction in the process of providing higher education to today's students.

Currently, digitalization is gaining momentum in modern society, transforming spheres of human life into new, more effective and modern ones in order to facilitate and improve living conditions in the state. This social transformation has a direct impact on higher education, since society forms the demand for human potential, the need for the development of science and technology, which in turn adapts the content of education to modern challenges and leads to the emergence of new curricula.

Digitalization is the introduction of digital technologies into all spheres of life: from interaction between people to industrial production, from household items to children's toys, clothing, etc. This is the transition of biological and physical systems into cyberbiological and cyberphysical (combining physical and computational components). The transition of activities from the real world to the virtual (online) world. Digital transformation is the mutation of existing analog (sometimes electronic) products, processes and business models of an organization, based on the effective use of digital technologies. Digitalization saturates the physical world with electronic-digital devices, tools, systems and establishes electronic-communication interaction between them.

Digital technologies include: Internet of Things, robotics and cyber systems, artificial intelligence, big data, paperless technologies, adaptive technologies (3D printing), cloud and fog computing, unmanned and mobile technologies, biometric technologies, quantum technologies, identification technologies, block-chain, etc. Digital technologies have an impact on society because they enable learning or working remotely, offer fast and full access to information, and open up new spaces for professional development. A digital society is a society that intensively and productively uses digital technologies for its own needs (self-realization, work, recreation, education, leisure of each person), as well as for achieving and implementing common economic, social and public goals [1].

Today, the problem of creating a high-tech information and communication educational and scientific environment that meets the needs of a digital society, global educational standards and contributes to the formation of information and communication competencies of all participants in the educational process from professor to student is an important and urgent issue for higher education institutions. Among the innovative technologies, on the basis of which a new digital educational environment is being created in higher education institutions, where students can access educational materials at any time and in any place, there are technologies of electronic (distance, mobile) learning, the use of which will make the educational process more attractive, democratic, comfortable and will stimulate students to self-education and lifelong learning.

The digital educational environment is based on pedagogical communication between teachers and higher education students, aimed at interaction and transmission of information in time and space using digital technologies and Internet communications [2]. The most common digital communication tools between teachers and students in the digital educational environment are:

– Moodle, Zoom, Google Meet, Microsoft Teams – organization of learning (text, presentation, video, testing, communication and evaluation of results); video conferences; asynchronous classes, discussion forums, chat rooms for communication, virtual classrooms, webinars; testing, storage and exchange of documents, accounting of learning results, calendar of events, news, etc.;

– social networks and messengers (Telegram, Viber, WhatsApp, Discord) – for communication with teachers and students, sending messages, methodological materials, correspondence, consultations; feedback, etc.;

– Google Chat, ChatGPT, Microsoft Copilot, Claude – for searching and systematizing sources; selecting methods and techniques; generating text, images, videos; translating, etc.;

– e-mail – for organizing the educational process, transferring educational and methodological support, presentations, lecture notes, assignments; for interaction between teachers and students, and students among themselves; feedback [3].

One of the means of information and communication technologies is the Moodle system – a modular object-oriented dynamic learning environment, which is a freely distributed educational content management system.

The Moodle system is focused, first of all, on organizing interaction between teachers and students in the learning process, although it can also be used to organize traditional distance courses, as well as support full-time and part-time learning [4].

Moodle is recommended for educational institutions as the most developed e-learning system that has a multilingual interface, in particular, the system localization in Ukrainian.

The Moodle system provides the opportunity to organize a full-fledged educational process, including learning tools, a system for monitoring and evaluating student learning activities, as well as other necessary components of the e-learning system.

MOODLE (Modular Object Oriented Distance Learning Environment) is a learning content management system (LCMS). With the help of this system, you can create electronic training courses and conduct both classroom (face-to-face) training and distance learning (correspondence/distance learning).

The Moodle system meets all the main criteria that are put forward for electronic learning systems, in particular, such as:

– functionality – the presence of a set of functions of different levels (forums, chats, analysis of student activity, course and study group management, etc.);

– reliability – ease of administration and management of training, ease of updating content based on existing templates, protection of users from external actions, etc.;

– stability – a high level of the system resilience in relation to different operating modes and user activity;

– cost – the system itself is free, the costs of its implementation, course development and support are minimal;

– no restrictions on the number of licenses for students;

– modularity – the presence in educational courses of a set of blocks of material that can be used in other courses;

– the presence of built-in tools for developing and editing educational content, integrating various educational materials for various purposes;

– support for the international standard SCORM (Sharable Content Object Reference Model) – the basis for exchanging electronic courses, which ensures the transfer of resources to other systems;

- the presence of a system for checking and assessing students' knowledge online (tests, tasks, monitoring activity on forums);
- convenience and ease of use and navigation – intuitive learning technology (the ability to easily find the help menu, ease of transition from one section to another, communication with a tutor, etc.).

The Moodle educational content management system enables a higher education institution to:

- implement a modular organization of the educational process in accordance with the requirements of the Bologna Declaration;
- implement a full-fledged scientific and methodological support for disciplines;
- integrate a HEI into the European scientific and educational space;
- include a HEI in the world register of owners of electronic forms of educational and methodological process organization;
- create an Internet environment for electronic forms of learning;
- create a distance education center;
- ensure operational control of the educational process.

Opportunities and advantages that the use of the Moodle system in the educational process provides to the participants of this process:

1) for the teacher:

- have a structured form of educational and methodological support for the discipline;
- have a convenient tool for accounting and controlling students' educational activities;
- set the required deadlines for students to complete tasks;
- have software that meets European standards for organizing the educational process according to the modular system in accordance with the Bologna Declaration;
- use text, graphic, audio and video materials when organizing the educational process;
- be included in the European register of owners of author's courses;
- quickly and conveniently change, expand, supplement and correct the educational and methodological materials of the discipline;
- organize computer testing of students' knowledge control, using different types of questions;
- have an automated rating system for evaluating students' independent work;
- involve students in the formation of educational and methodological materials in the discipline;
- have software that is protected from unauthorized access, changes and damage (destruction);
- have software for performing scientific and methodological developments at their own choice, sequence and pace;

2) the student:

- have access to logically structured and complete educational and methodological materials that improves the conditions for independent mastering of the discipline content;
- have means for self-testing and completing tasks and their evaluation regardless of the human factor (teacher);
- personal participation and assistance to the teacher in computer support of the educational process;
- take real part in the scientific and methodological work of the departments;

- expanded access to Internet resources;
- the opportunity to master educational material remotely;
- pass the assessment and examination session ahead of schedule.

Editing of course content is carried out by the course author in any order and can be easily carried out directly during the learning process. It is quite easy to add various elements to the electronic course: Lecture, Task, Forum, Glossary, Wiki, Chat, etc. For each electronic course there is a convenient page for viewing the latest changes in the course.

Thus, the Moodle system provides the teacher with tools for submitting educational and methodological materials of the course, conducting theoretical and practical classes, organizing both individual and group learning activities of students.

Since the main form of knowledge control in distance learning is testing, Moodle has a powerful tool for creating tests and conducting educational and control testing. Several types of questions in test tasks are supported (multiple choice, matching, yes/no, short answers, essays, etc.). Moodle provides the user with many functions that facilitate the processing of test results. You can set an evaluation scale, and when the teacher corrects test tasks after the students pass the test, there is a mechanism for semi-automatically listing the results.

Moodle not only has a multifunctional module for testing, but also provides the opportunity to evaluate the work of students performed in such elements of the course as Assignments, Forum, Wiki, Glossary, etc., and the evaluation can be carried out according to scales created by the teacher him/herself. There is a possibility of evaluating Wiki articles, glossary, answers on the forum by other course participants. All assessments can be viewed using the course assessment journal, which has many settings for displaying and grouping assessments.

The system supports advanced tools for statistical analysis of test results and, very importantly, the complexity of individual test questions.

Taking into account the above, we note that the Moodle system can be used not only for organizing distance learning in higher education institutions, but also to support the traditional educational process of higher education using a blended (combined) model.

Thus, the modern educational environment in digital format provides many opportunities for building an effective educational process in a higher education institution and creates all the conditions for the formation and development of professional competencies and professional communication skills in students, which will contribute to professional self-realization and self-improvement in the future[5].

## **10.2 BUSINESS COMMUNICATION CULTURE AS A COMPONENT OF THE PROFESSIONAL CULTURE OF A FUTURE BANKING SPECIALIST**

The professional activity of a banking specialist is associated with a large number of business contacts, communication with clients, the search for interaction partners, etc., which requires a developed professional culture. One of the components of professional culture is the ability of the activity subject to conduct

business communication on the basis of equal interaction with business partners, which is based on a special logic, psychology, ethics and business etiquette, which increases its competitiveness and prestige. Culture is an obligatory attribute of any community of people, including in the business world, where the ability to communicate productively with real or potential partners is an important criterion for determining the professionalism of a business person, a necessary element of his/her conversational and psychological culture.

The issue of professional culture is the subject of research by scientists from various scientific fields: teachers, psychologists, philosophers, sociologists, managers, etc. R. Vechirko defines professional culture as "a high level of professional training, its quality. This is the brightest facet of the human personality and society as a whole. The high state of the general culture of society, the nation, provides proper education and professional culture" [6]. I. Sabatovska considers "professional culture from the point of view of society's need for the cultural level of people engaged in a particular professional activity. It consists in raising the professional activity of each person to the general norms for performing a certain type of work. Undoubtedly, being an important indicator of the social maturity of an individual, professional culture is also a complex of personal knowledge, skills, abilities, and qualities that determine the readiness to realize one's essential forces in a specific field of social work" [7].

The process of forming such a complex phenomenon as the "professional culture of a banking specialist" is long-term and complex, since it is associated, firstly, with ensuring the professional training of these specialists, which will cover not only the acquisition of knowledge, skills and abilities within the educational process, but also direct the extracurricular activities of students to self-improvement and the development of professional culture; secondly, with the presence of a certain educational environment and the creation of appropriate conditions, in which it can achieve a positive result. This means that the specified socio-professional phenomenon must be formed in a future specialist while studying at a higher education institution.

The culture of business communication as a component of professional culture appeared as a result of the branching of management, when communication only at the level of subordination was considered as intra-firm management, communication only at the level of horizontal, that is, partnership relations – as inter-firm management, and later transformed into the concept of "communication of business partners". Business communication is a necessary part of human life, the most important type of relationship with other people. Depending on how a person understands moral norms, what content he/she puts into them, to what extent he/she takes them into account in communication, he/she can either facilitate business communication, make it more effective, help in solving the tasks set and achieving goals, or complicate this communication and even make it impossible.

Business communication is a very multifaceted process that is implemented in the forms of interpersonal communication, social dialogue, business and professional communication, etc. [8]. Business communication can be direct, when people interact face to face, and indirect, which is implemented through business letters, orders, instructions, reports, telephone and electronic communication.

In general, communication is described as a process of exchanging information, thoughts, judgments, assessments, feelings between people. In this case, formal and informal communication are distinguished. Informal is a subjective, unregulated communication, its purpose and nature are determined by the social functions of a person and are determined by personal relationships between people. Formal includes

business communication, which is carried out in accordance with certain rules and is a specific form of contact and interaction between people who have certain powers from their organizations.

Informal communication differs from formal communication in that even if we don't like it or something doesn't suit us, we can just leave, while in formal communication we must continue to communicate regardless of the relationship. And in such cases, it is necessary to know additional rules and techniques that will help find a way out of difficult, unpleasant situations.

Informal communication is not planned in advance, its purpose and content are not determined, while business contacts always involve preliminary preparation, definition of content, goals, possible conclusions. In an ordinary conversation, any topics can be discussed, often unrelated to each other. A business conversation does not go beyond the topic, is constructive in nature, aimed at solving specific tasks, achieving the intended goal. Business communication is always result-oriented.

Conscious mastery of the principles and culture of business communication and their correct use increases the effectiveness of business contacts and, as a result, the effectiveness of the work of an enterprise or firm. The specificity of business communication is due to the fact that it arises on the basis of and in connection with a certain type of activity related to the creation of any product. In this case, the parties to business communication act in formal (official) statuses that determine the necessary norms and standards of human behavior, including ethical ones. The ethics of business communication can be defined as a set of moral norms, rules and concepts that regulate the behavior and relationships of people in the process of their production activities.

Business communication ethics covers a wide range of issues related to the goals and means of doing business. It must be taken into account in its various manifestations: in relations between the enterprise and the social environment; between enterprises; within the enterprise – between managers and subordinates, between people of the same status. Each of the listed types of business communication has its own specifics. The task is to formulate such principles of business communication that would not only correspond to each type of business communication, but also would not contradict the general moral principles of human behavior. At the same time, they should be a reliable tool for coordinating the activities of people involved in business communication.

For a business person, communication is his/her environment. Without business communication in general, and without speech in particular, it is impossible to form a human personality, educate him/her, and develop his/her intellect. Correct speech is a manner of speaking that consists of the correct tone, articulation, pronunciation, volume, and precise selection of words. Language culture is a central element of a business image.

Business conversation is oral business contact between people connected by business interests who have the necessary authority to establish business relationships, solve business problems, and develop specific approaches to their solution. Business conversation is primarily oral business speech, which is significantly different from its written form. This is direct communication that involves a specific interlocutor (or interlocutors), which allows you to directly influence him/her (or them). The presence of an interlocutor allows you to use facial expressions, gestures, intonation, and other communication techniques.

In business communication, it is recommended to choose simple, understandable to everyone, the most suitable and expressive words, which can be easily replaced if necessary. Business conversation

should be full of casual forms of communication, as well as some grammatical and stylistic features, since direct communication excludes the possibility of prior reflection.

It should be remembered that the culture of business communication is the most important aspect of the morality of professional behavior of a business person.

Knowledge and implementation of the norms and rules of professional culture is a necessary professional quality that must be acquired and constantly improved. It should also be remembered that compliance with the rules of the culture of business communication and behavior implies, first of all, deep respect for the human personality [9].

### **10.3 USING TRAINING TECHNOLOGIES TO HELP STUDENTS MASTER THE SKILLS AND ABILITIES OF PROFESSIONAL INTERACTION AND THE BUSINESS COMMUNICATION CULTURE OF A BANKING SPECIALIST**

The use of training technologies in modern higher education in the context of our scientific research is aimed at mastering the skills and abilities of professional interaction in compliance with the values, norms and rules of professional ethics and the culture of business communication, which form the basis of the professional culture of banking specialists.

Training technologies are a combination of a complex of active methods and forms of organizing interaction between participants (business, role-playing games, cases, group discussion, brainstorming, situation analysis, etc.), which are aimed at acquiring certain skills, abilities, experience, personal and professional improvement. Training technologies are implemented during the training.

In domestic and foreign theory and practice, training and its implementation technologies were considered by V. Zlyvkov [10], O. Kokun [11], O. Kolodizev [12], S. Lukomska [10], N. Miloradova [13], L. Moroz [14], V. Tyshchenko [15] and others.

In the most general form, training is a specially organized learning that is carried out through the use of appropriate exercises (tasks, actions, games, situations, etc.) with the aim of forming new and improving existing skills and abilities, increasing the effectiveness of certain types of activity [16]. When conducting training, techniques are used, the choice and combination of which depends on the goal, tasks, content of the activity (educational, professional) and focus on the psychological sphere of the personality (intellectual, emotional, volitional, communicative) [17].

As noted by O. Kokun [11], the use of training as a method of preparing future specialists for professional activity allows the implementation of the following functions:

- 1) educational – development of special professional knowledge and skills;
- 2) informational – transfer of information that helps to expand the understanding of professional activity, to navigate in the professional environment;
- 3) motivational – changing the attitudes of employees and stimulating professional motivation;
- 4) communicative – development of communicative skills and abilities, improvement of models of interpersonal and professional communications.

Taking into account the above, the choice of training technologies for the formation of business communication culture is determined by a number of provisions.

Firstly, the implementation of training technologies allows the development of skills and abilities of interpersonal and professional interaction and communication, the formation of models of behavior and business communication, the acquisition of experience in professional activity, the increase of motivation and interest in the profession, which integrates the concept of "professional culture".

Secondly, it allows the variably use of a complex of interactive methods (game, non-game, dialogic, situational, etc.) and techniques in accordance with the purpose and needs of professional activity in the context of the formation of a professional culture of future banking specialists.

Thirdly, the possibility of developing training programs that are directly aimed at the development of psychological attitudes, motivation and mastery of specific skills necessary for specific types of activity or for the performance of tasks of professional activity of specialists in a certain field, in particular, banking.

In order to form professional interaction culture and business communication skills when implementing training technologies, it is advisable to use training techniques that are divided into four groups:

1) information techniques aimed at familiarizing participants with significant amounts of information new for them, conceptual concepts, theories, etc. The specified technique is implemented in the following sequence – conducting a mini-lecture, informing and instructing (the main part), discussion. The use of this technique involves the application of technical means of training (multimedia presentations, videos, etc.). In order to obtain "feedback" on the mastery of the specified information, it is advisable to conduct a group discussion;

2) simulation techniques that imitate the workplace, organizational situation, involve the implementation of certain actions and solving professional activity tasks. This technique involves the use of active learning methods: decision-making games, solving typical professional situations, case studies, role-playing and business games of a professional orientation. This technique allows:

a) to select professional situations of different orientations, taking into account factors and interactions that reflect the real conditions of professional activity;

b) to highlight and make clear professional functions and tasks;

c) to determine and work out the optimal actions for typical professional situations;

d) to work out certain exercises, realizing the essence of the task and developing practical skills;

e) to make mistakes without fearing their negative consequences;

f) to increase the interest and professional motivation of participants;

g) to adapt topics to the needs of professional activity;

3) exercises in the practical performance of professional functions, which are programs of industrial training of students, which are carried out either directly at the workplace or in special training centers using certain software tools. This technique includes the method of work rotation (or the method of "cross-training"), if it is aimed at achieving certain training goals (for example, students get acquainted with or independently perform certain professional operations under the guidance of a mentor). This training technique has the following advantages:

- a) no need to simulate the situation and transfer the learning results to real conditions of professional activity;
- b) active participation of a student in the application of knowledge, mastery of skills and practical experience;
- c) control and guidance, which allow avoiding typical mistakes and accelerating learning;
- d) the possibility of feedback and maximum approximation to real professional situations.

However, this technique has weaknesses, for example, the need to appoint special managers (mentors) to participate in the training and/or create training centers (auditoriums), which requires additional costs;

4) group dynamic exercises aimed at the formation and improvement of various personal characteristics of specialists: personal qualities (leadership, management, communication, etc.), culture of business communication, interaction in a team, the ability to prevent or constructively resolve conflicts, etc. Group dynamic exercises are focused on the ability to use the available personal resource of the training, the ability to improvise, the ability to change the situation and/or adapt to it. These exercises are widely used for employees whose activities are directly related to interpersonal and professional communications, in particular the provision of services (social, financial, educational, etc.) [18].

This technique has the following advantages: the ability to improve and develop professionally important qualities, practicing behavior models in certain professional situations, developing flexibility and adaptability to environmental changes, a specific target orientation. The weaknesses of this technique include: the likelihood of distraction from solving the main training tasks due to performing exercises and practicing skills when the situation changes; the dominance of communicative and upbringing influence.

#### **10.4 PRACTICAL IMPLEMENTATION OF THEORETICAL ASPECTS OF THE USE OF TRAINING TECHNOLOGIES IN ORDER TO MASTER THE SKILLS AND ABILITIES OF PROFESSIONAL INTERACTION AND THE BUSINESS COMMUNICATION CULTURE OF A BANKING SPECIALIST**

In order to promote the formation of the professional culture and the business communication culture of future bachelors of banking, an author's professionally oriented training "*Professional Culture of a Banking Specialist*" was developed, which provided for the use of a complex of active methods and forms of organizing interaction between participants (role-playing games, cases, group discussion, brainstorming, training exercises, situation analysis, etc.) and to cover all areas of the educational environment of a higher education institution – educational, communicative, upbringing, and to influence the personal spheres of participants in the educational process (motivational, communicative, intellectual, personal), which will allow to increase the level of their professional culture.

*The purpose of the training:* the formation of the professional culture and the business communication culture of future bachelors of banking.

*Tasks:*

- 1) increasing students' awareness of the features and conditions of professional activity;

2) increasing students' motivation and interest in professional activity, forming a positive attitude towards the chosen profession in them;

3) forming value orientations, stable ethical principles and norms of professional activity, strengthening an active professional position;

4) developing a humanistic orientation in students and forming high-moral ideals of professional activity;

5) forming professionally important communicative qualities (tolerance, tact, persuasiveness, empathy, the ability to prevent conflicts and effectively resolve them);

6) improving and forming communicative skills and abilities;

7) developing reflection skills, self-education and self-improvement.

Expected results of training work:

– *the increased level of professional knowledge* (knowledge of the specifics and features of future professional activity; knowledge of the essence and features of professional communication of future banking bachelors, necessary for the performance of official duties);

– *the increased level of professional motivation* in students, the formation of a positive attitude towards the chosen profession, professional values, aspirations, attitudes, interest, motives of professional activity, the desire to realize oneself in professional activity;

– *formed professionally important qualities* (organization, purposefulness, tact, persuasiveness, communicative tolerance, empathy, reflexivity, etc.);

– *formed communication skills and professional communication skills* of future banking bachelors (the ability to objectively perceive and correctly understand a communication partner; the ability to adequately understand the feelings and emotional state of a communication partner; the ability to listen and establish "feedback" with partners in a situation of individual business communication; the ability to establish and maintain psychological contact, establish effective professional and interpersonal communicative interaction; the ability to freely use verbal and non-verbal means of communicative influence; mastery of business communication ethics, language norms and speech culture; compliance with the rules of speech etiquette in professional activities; the ability to flexibly change the style of communication in conflict situations, etc.);

– *formed reflective skills and abilities* (the desire to carry out value reflection and self-reflection; the ability to critically evaluate one's personal, professional qualities and results of activity; the ability to critically evaluate one's actions and the actions of others; a motivated desire for continuous self-education, self-development and self-improvement).

*Program and content of the training.*

*Lesson 1. Topic: Professional activity of a banking specialist (3 hours).*

Goal: determining the features of the professional activity of a banking specialist, developing professional motivation.

Content: mini-lecture, conversation, educational group discussion, performing training exercises, feedback, tasks for independent work.

Tasks: establishing training goals and expectations of students; pedagogical diagnostics of the formation level of professional culture in students; determining the stages of the professional path and professional development of the personality; developing an individual self-improvement program for each student.

Content: setting students up for active work, finding out the formation level of students' professional culture, group discussions: "Features of a professional banking specialist", "Professional functions of a banking specialist", "Communicative component in the activities of a banking specialist", "Essence and structure of professional motivation". Definition of a self-improvement program by each student. Performance of training exercises (exercise "Rules", exercise "Expectations", exercise "Declaration of self-worth", exercise "Who am I?"). Role-playing of professional activity situations: Business game "Learn business communication", Role-playing game "Means of professional development: professional reflection, analysis and introspection, professional intuition".

Tasks for independent work:

1) preparation of essays on the following topics: "Why I chose the profession of a bank employee", "What I like about the profession of a bank employee", "What are my professional prospects", "My future professional activity: pros and cons", "My life and professional values", "My future professional responsibilities", etc.;

2) drawing up a map of the motives for choosing the profession of a bank employee with further discussion;

3) test "Tree". Using a drawing, reflect your level of readiness for future professional activity. Give a comment on the completed task;

4) professional agitation. Prepare a speech for 3-5 minutes. Reflect the positive and negative aspects of the future profession;

5) keep a diary of self-knowledge and self-development, in which you will record your own observations every day (What can I do to improve my professional qualities? What qualities of mine do I need to work on? Which ones should I improve? What knowledge do I lack? Where and when can I get them? What resources do I need for this? etc.);

6) create a program for your own self-development and self-improvement.

*Lessons 2–3. Topic: Moral and ethical principles of professional activity of a banking specialist (6 hours).*

Goal: forming value orientations, stable ethical principles and norms of professional activity, strengthening an active professional position, forming the ethical culture and moral qualities of students.

Content: mini-lecture, self-diagnosis, educational group discussion, case-study, role-playing of situations of future professional activity, performance of training exercises, feedback, tasks for independent work.

Tasks: increasing the level of professional and ethical knowledge of students; determining moral and ethical requirements for the professional and personal qualities of a banking specialist; developing a humanistic orientation and forming highly moral ideals of professional activity in students; forming students' moral qualities; developing their own strategies and tactics of effective behavior in future professional activity.

Content: discussion of completed tasks for independent work. Mini-lecture "The essence and structure of the concept of "Professional culture of a banking specialist", Group discussions: "Current problems of modern professional ethics", "Professional and ethical culture of a banking specialist: problems of formation", "Moral principles and moral qualities of a banking specialist", "Manifestations of professional and ethical culture in the activities of a banking specialist", "Moral and ethical requirements for professional and personal qualities of a banking specialist", "Basic rules and principles of service etiquette of a banking specialist". Role-playing of professional activity situations. Performing training exercises.

Tasks for independent work:

1) compile a dictionary-reference book that reflects the essence of the professional culture of a banking specialist;

2) preparation of essays on the following topics: "Moral and ethical principles of professional activity of a banking specialist", "Moral and ethical aspects of the problem of professional communication of a banking specialist", "Ethical norms of business communication", "Specifics of communication and interaction of a banking specialist", "Stages and patterns of formation and development of a banking specialist as a professional", etc.;

3) outline ways to improve professional and ethical culture to achieve professional ACME.

*Lessons 4–6. Topic: Culture of professional communication of a banking specialist (6 hours).*

Goal: mastering the components of the professional communication culture; forming skills and abilities of professional interaction and business communication.

Content: mini-lecture, educational discussions, brainstorming, case-study, role-playing situations of future professional activity, performance of training exercises, feedback, tasks for independent work.

Tasks: determining the features of professional communication of a banking specialist; developing one's own strategies and tactics of effective behavior in future professional activities; increasing the level of empathy (ability to sympathize, empathize); developing communication skills and abilities; developing skills to effectively resolve conflict situations.

Content: discussion of the completed task for independent work. Mini-lecture "Professional communication, its functions, types, structure". Filling out a questionnaire on the formation of professional communication skills. Discussion on the topics "The role and place of communication in the professional activities of a banking specialist", "Communicative component in the activities of a banking specialist", "Structure of professional communication of a specialist", "Factors and patterns of the professional communication effectiveness", "Ethics of communication in professional activities", "The role of empathy in the process of professional communication", "Styles and models of professional communication", "Conflict situations in professional activities and methods of resolving them", "Rules of conflict-free communication", "Basic tactical moves in conflict". Training exercises for teaching communication (exercises for developing pre-communicative orientation skills; for developing contact skills; exercises for developing speech communication skills): exercise "Clarification of information", exercise "Confirmation", exercise "Discharge", exercise. Formulation of "I-statements", exercise "Rules of dialogical interaction". Role-playing of situations of future professional activity (role-playing game "Complex conversation", business game "Forms of communication"). Feedback: reflection of the changes that occurred with each participant during the lessons.

Tasks for independent work:

1) prepare mini-speeches for group discussion: "Communicative competence and its components"; "The role and place of professional communication in professional activity"; "The role of empathy in the process of professional communication"; "Styles and models of professional communication"; "Self-development of a specialist in the process of professional communication"; "Ethics of communication in professional activities"; "Professional tact and ethics of business communication", "Conflicts in the process of professional communication"; "Styles of behavior in a conflict situation", "Universal methods of conflict

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resolution", "Conditions and ways of developing the professional communication culture of a banking specialist", etc.;

2) test yourself using the following methods: Diagnostics of communicative tolerance (V. Boyko), Diagnostics of self-regulation and communicative control (M. Schneider), Methodology for diagnosing the level of empathy (V. Boyko), Diagnostics of communicative and organizational tendencies (COT), Michelson's communicative skills test, Thomas's test: diagnostics of typical ways of behavior in conflict situations. Compile your psychological and communicative portrait based on the results of the test;

3) identify ways to improve your own professional communication skills.

*Lessons 7–8. Topic: Professionally important communicative qualities of a banking specialist (9 hours).*

Goal: forming professionally important communicative qualities in students as future banking specialists.

Content: mini-lecture, self-diagnosis, role-playing of situations of future professional activity, brainstorming, performance of training exercises, feedback, tasks for independent work.

Tasks: forming communicative, organizational qualities; forming a fair, polite, attentive, friendly and impartial attitude towards citizens in the process of professional communication; development of skills of reflection, self-education and self-improvement.

Content: discussion of completed tasks for independent work. mini-lecture "Professionally important communicative qualities of a banking specialist (empathy, knowledge, skills, abilities and methods of communication and interaction, ability to establish psychological contact, overcome communication barriers, tolerance, verbal activity)". Group discussions: "The importance of professionally important qualities of a specialist for future professional activity", "Professionally important qualities of a banking specialist", "Ways to improve professionally important qualities of a banking specialist", "Professional development of the personality of a banking specialist". Assessment of the development of professionally important communicative qualities. Role-playing situations of future professional activity. Completion of tasks and training exercises. Feedback: reflection on the changes that occurred with each participant during the lessons.

Tasks for independent work:

1) compile a list of qualities of the "ideal banking specialist" with further discussion;

2) determine the formation of professionally important communicative qualities in yourself. Compile your own personal profile;

3) compile a dictionary-reference book that reflects the essence of the professional communicative culture of a banking specialist;

4) prepare a micro-speech: "Stages and patterns of the formation and development of a professional";

5) outline ways to improve professional communicative competence to achieve professional ACME.

*Lessons 9–10. Topic: Formation of professional and ethical skills of business communication of a banking specialist (12 hours).*

Goal: Forming speech and communication and ethical business skills.

Content: self-diagnosis, educational group discussions, brainstorming, case-study, role-playing situations of future professional activity, performance of training exercises, feedback, tasks for independent work.

Tasks: performing speech exercises, communicative and situational tasks and cases; working out one's own strategies and tactics of effective behavior of future professional activity; developing communicative skills and abilities; developing skills to effectively resolve conflict situations.

Content: discussion of the completed task for independent work. Mini-lecture "Professional and communicative skills of a banking specialist." Discussions on the topics "Communicative skills of professional communication", "Interactive skills of professional communication", "Perceptive skills of professional communication", "Conflicts in the process of professional communication"; "Styles of behavior in a conflict situation", "Universal methods of conflict resolution". Filling out a questionnaire on the formation of communicative skills and abilities. Performance of speech exercises, communicative-situational tasks and cases. Role-playing situations of professional activity: Role-playing game "Conflict at the company", Role-playing game "Self-development of a specialist in the process of professional communication". Communicative exercise "Convey in one word". Communicative exercise "Conversation" Communicative exercise "Celebrities". Feedback: reflection on the changes that occurred with each participant during the lessons.

Tasks for independent work:

- 1) prepare mini-speech for group discussion: "Self-realization in professional activity"; "Ways of professional self-improvement";
- 2) identify ways to improve communication skills.

## 10.5 DISCUSSION OF THE RESULTS OF SECTION 10

Modern requirements for the level of training of banking specialists require conducting scientifically based research and determining the formation level of their business communication culture in the context of professional culture formation. The implementation of these requirements involves the isolation (or development) of a set of pedagogical diagnostic methods that will allow objectively assessing the formation level of the relevant characteristics that make the basis of the professional culture of banking bachelors. In the context of developing a set of methodological measures, it is necessary to analyze the impact of the training course "Professional Culture of a Banking Specialist" on the formation of the business communication culture of future banking specialists.

Experimental and research work on the formation of the business communication culture of banking bachelors in classes on "Ukrainian language (for professional purposes)" was carried out in stages.

The first stage involved the development of methodological principles of the study, the quantitative and qualitative composition of the participants of the experiment was established, a survey of students was conducted, diagnostic methods were determined, the initial formation level of the business communication culture of banking bachelors was established according to the selected criteria. At the second stage, experimental measures were substantiated and implemented that could affect the formation of the business communication culture of banking bachelors. At the third stage, systematization, generalization and qualitative and quantitative processing of data, clarification of the formation level of the business communication culture of banking bachelors after the implementation of experimental measures, comparison of the results

obtained with the initial ones, determination of the effectiveness of their implementation according to the results of pedagogical diagnostics were carried out.

The pedagogical experiment was attended by first-year students of the Semyon Kuznets Kharkiv National Economic University of the 2024–2025 academic year. An experimental group of 25 people and a control group of 23 people were created to implement the experimental work. The difference between the numbers in the experimental and control groups is insignificant (2 students) and is due to the number of students in the study groups, which has no significant impact on the results of the study.

To identify the formation levels of the business communication culture of banking bachelors at the beginning of the pedagogical experiment, we selected and used the following research methods: empirical methods (observation, conversation, interview, testing) and diagnostic methods that allow us to identify the formation of the relevant indicators: the method "Diagnostics of personality orientation" (V. Smekal, M. Kucher), the method of diagnosing communicative and characterological personality traits (L. Umansky, I. Frenkel, etc.), the test of communicative skills (L. Mikhelson, modified by Yu. Gilbukh).

The diagnostics of formation indicators of the business communication culture of banking bachelors was carried out on the basis of a cross-section of knowledge and the performance of test tasks by students of the experimental and control groups. The following knowledge was diagnosed: axiological (the concept of values, knowledge of ethical and cultural principles of professional communication, language norms, speech culture, speech etiquette and the features of their application in professional activities); speech and communicative knowledge (knowledge of the essence, types, functions, means, methods, techniques of professional communication, knowledge and correct use of lexical, grammatical, orthoepic, stylistic, phraseological norms of the literary language, etc.).

The results obtained indicate that at the beginning of the experiment, a significant number of students of the experimental and control groups had a low formation level of axiological and speech and communicative knowledge, which directly affects the formation level of business communication culture. This may be due to the beginning of their studies at a higher education institution. In order to identify the level of students' awareness of the concept of "business communication culture" of future banking specialists, a pilot study was conducted with the students in the form of a diagnostic conversation. 46 students participated in the conversation.

The students revealed the essence of the concepts of "speech culture" and "ethical culture", defined the concept of "professional culture", and also correlated the content of this concept with the concepts of "professional activity", "communicability", "professional motivation". Analyzing the students' responses, we came to the conclusion that only 16% (8 people) of the surveyed students understand that the culture of business communication of a banking specialist combines language etiquette, moral values, general culture of behavior and professional skills and abilities; 30% (14 people) realize that successful communication, and communication skills appear in the process of communicative experience, which is directly related to the formation of a communicative personality; 54% (24 people) do not sufficiently understand the connection between the concepts of "professional motivation" and "professional activity", do not consider professional motivation as a stimulus that determines the choice of a profession and the long-term performance of duties related to this profession. The students do not always clearly define the concept of "business

communication culture" of future banking specialists, do not differentiate the concepts of "professional education" and "professional skills of a banking specialist"; do not distinguish between the concepts of "professional culture" and "corporate culture".

The most common is the erroneous identification of speech etiquette with the moral values of a specialist, where the rules of speech behavior are presented not as an element of the culture of communicative relations and social culture in general, but as a component of a moral norm that is inherent in human nature itself and manifests itself in a particular life situation.

Thus, the obtained data indicate that the students have fragmentary and superficial knowledge about the essence of the business communication culture of banking specialists, there is no systematic approach to their assimilation; the reproductive nature and insufficient level of knowledge about the business communication culture, communication, ethical culture as a scientific category are obvious, there is no clear awareness of the importance of these characteristics in the professional activities of a bank employee.

During the academic year, educational tools (business games, project defenses, creative relay races, philological tournaments, training games, intellectual rings, competitions, virtual trips) were developed and implemented in the process of humanitarian training in order to form business communication culture and professional skills in students. After the work carried out, a test control was introduced at the end of the academic year to diagnose the formation level of the business communication culture of banking bachelors from the experimental and control groups.

According to the results of the experiment, according to all the specified criteria, a more intensive positive dynamics was observed in the formation level of the studied phenomenon in the higher education students of the experimental group compared to the control group. Thus, we experimentally confirmed the effectiveness of the complex of measures introduced in the educational process in the classes on "Ukrainian language (for professional purposes)", aimed at mastering by students the skills and abilities of professional interaction and business communication with observance of the values, norms and rules of ethics of a banking specialist, which positively affects the formation of business communication culture and professional culture.

Therefore, taking into account modern realities aimed at training a specialist in a higher education institution who is able not only to carry out banking transactions and provide banking services, but also to professionally interact with the environment, know the norms and rules of professional ethics, business communication and speech etiquette, we can formulate the following conclusions: the digital educational environment creates new high-tech learning conditions that meet the needs of the information society and contribute to the formation of information and communication competencies of all participants in the educational process; the culture of business communication increases the general level of professional culture of a future banking specialist and contributes to further professional development and self-realization in work; one of the most effective methods of forming business communication culture is the use of training technologies that combine a complex of interactive types of educational activities and are aimed at personal and professional improvement; the pedagogical experiment showed intensive positive dynamics in the formation levels of business communication culture after the introduction of training technologies into the initial process, which proves the correctness of the choice of pedagogical actions for the formation of the business communication culture of future banking bachelors.

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**ABSTRACT**

The work is devoted to the analysis of metacognitive resources of modeling text messages using projective-recursive technology in teaching English. The authors highlight the essential dimensions of communicative discourse and text as its basic element. The resources of cognitive-discursive and fractal modeling of texts in the plane of implementation of metacognitive activity of foreign language learning subjects are considered. The effectiveness of the integrative model ILDA in measuring the multimodal development of bilingual academic literacy of education seekers is proven. The role of recursive mechanisms in organizing thought-speech patterns and providing productive feedback in bilingual communication situations is substantiated. The experience of using metacognitive schemes of various types in teaching English for the formation of text creation skills is presented. The effectiveness of the use of metacognitive schemes in the logic of projective-recursive technology of teaching English is proven.

**KEYWORDS**

Metacognitive modeling, communicative discourse, cognitive-discursive logic of text creation, fractal modeling of texts, text messages, projective-recursive technology, metacognitive schemes, foreign language learning.

**11.1 CONCEPTUAL PRINCIPLES OF MODELING TEXT MESSAGES AS METACOGNITIVE FORMATIONS**

The deployment of variable matrices of the globalized world order of the modern information society in the unstoppable dynamics of the present, the expansion of the design and resource capabilities of the metacognitive activity of a person of the 21<sup>st</sup> century determines the change of paradigmatic vectors of mastering a foreign language. The main direction of the systematic assimilation of language material is currently training in the congruent perception of logical-semantic constructs and grammatical schemes of a foreign language and the creation of a polymodal communicative discourse. Therefore, foreign language teaching should be directed (and this is proven by the analysis of scientific sources [1–4]) primarily at the integrative dimensions of text creation.

Considering the content of text creation through the prism of a systemic combination of communicative-functional, systemic-structural and cognitive-discursive scientific paradigms, we note that the communicative discourse itself in the fleeting realities of life is expressed by scientists (for example: N. Tokareva, G. Kress, T. Van Leeuwen, M. Heinemann, W. Heinemann, F. Hermanns, J. Kijko, etc. [1–12])

as a complex sociolinguistic and psycholinguistic phenomenon designed to provide metacognitive modeling of the global information space in the coordinates of the speech-thinking, affective-volitional, axial segments of the semiotics of the subject-subject life of the individual.

In the context of the topic we are studying, the conceptual ideas of critical discourse analysis by N. Fairclough, regarded by adherents of discursive psycholinguistics as a theoretical basis for a comprehensive analysis of the system of a person's use of linguistic resources and general social practices of self-realization for modeling text messages, can be considered interesting. N. Fairclough refers the concept of "discourse" to semiotic systems and interprets it as a way of using language and the social practice of its use, which means the meaning of communicative experience based on certain worldview positions and intellectual culture of the individual [6]. Communicative discourses, according to the researcher's scientific views, participate in the creation of social identity and social relations (in accordance with the knowledge and systems of internalized meanings) of speech subjects, which determines the understanding/analysis/production of text messages in logical-semantic unity with the sociocultural continuum of life-creation. A speech act (or a discrete model of communicative discourse [1, 2]) in the three-dimensional concept of N. Fairclough is interpreted as a coherent communicative event (a specific case of language use), consisting of three dimensions:

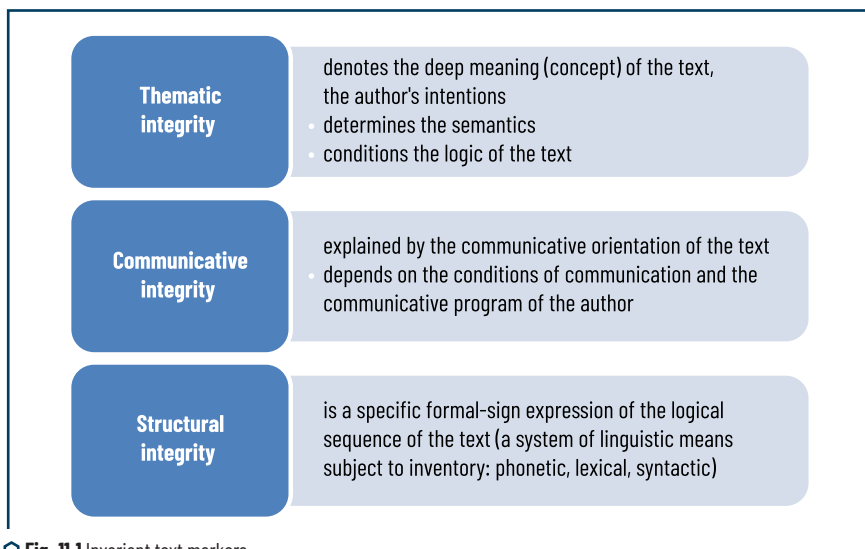
- text (oral or written speech, visual image or their combination), defined by a certain linguistic structure (dictionary, grammar, syntax of a sentence or complex semantic wholes) of a message that is perceived by the agent of speech or transmitted to the addressee;
- discursive practice, which involves the generation and perception/understanding of texts; the analysis of discursive practice focuses on identifying the features of the use of accessible discourses by communication subjects to model a text message and its interpretation in the process of perception;
- social practice of interpersonal contacts, which is prolonged by the formation and formulation of text messages accessible to speech agents [6].

The dimensions of a speech event are closely related to each other: the formal-linguistic characteristics of the text influence the formation (articulation) of the text construct and the features of its use in the cultural-social context [6], which contains both discursive and non-discursive elements. It is also worth considering the dynamic nature of communicative discourse, prescribed in the critical discourse analysis of N. Fairclough, the dimensions of which provide not only for the fixation of a psycholinguistic fact, but also for the possibility of flexible change of discourse in the process of modeling new combinations of the subjective experience of the speech personality in patterns of interaction. Thus, the communicative discourses internalized by a person determine the basic coordinates of the person's reflection of the picture of the world, the center of which is the subject of speech him/herself – the speech personality: the discursive formations of the speech segment are woven into the personalized processes of subjective perception, preservation and transmission of information, into the processes of verbalization of meanings and text creation.

The achievements of N. Fairclough are reflected in subsequent scientific research by linguists and psycholinguists, in particular in the studies of R. Brinker, S. Pappert, H. Cölfen, G. Kress, T. Van Leeuwen, M. Heinemann, W. Heinemann, F. Hermanns, J. Kijko, N. Tokareva, etc. [1, 5, 8, 9, 12, 14].

In the modern psycholinguistic space, it is generally accepted to treat discourse as a complex communicative phenomenon, the components of which are the text and extralingual factors (background knowledge, views, attitudes, goals of the addressee) [13]. Thus, based on the dichotomy "discourse – text" consonant with the continuum "process – result" [1, 6, 8, 9, 11, 13, 16], text (from Latin *textum* – "link", "connection", "fabric") should be considered as a basic element of discourse, which is created according to conventional rules accepted in a certain communicative sphere and is interpreted as a completed message of a certain content, which is organized according to the model of a functional style and is characterized by its distinctive features.

Invariant features of the text are mainly [1, 5, 10, 13] considered to be markers of thematic, communicative and structural integrity (**Fig. 11.1**).



◉ **Fig. 11.1** Invariant text markers

Accordingly (and we fully agree with the statement of K. Serazhim in this point) for competent understanding or production of the text, the recipient or author of the text must understand it as a symbolic order of contents, correlate the text with reality, with his/her knowledge and ideas about it [13]. Analytical decomposition, fragmentation of elementary cognitions of perception for further expression of thought, awareness of meanings and expansion of semantic denotations, understanding of essential markers of abstractions and other operations with signs allow a person to go far beyond the boundaries of objective denotations of sensations and perception and model a holistic representational-sign system of text constructs. Metacognitive textual formations, thus, format the basis of a person's mental development, determine the congruence of reflection and self-expression, mark a person's attachment to socio-cultural and historical values.

Accordingly, the process of text creation appears as a metacognitive dimension of speech activity (Fig. 11.2), and not just a linear transcoding of semantic denotation into a text message.

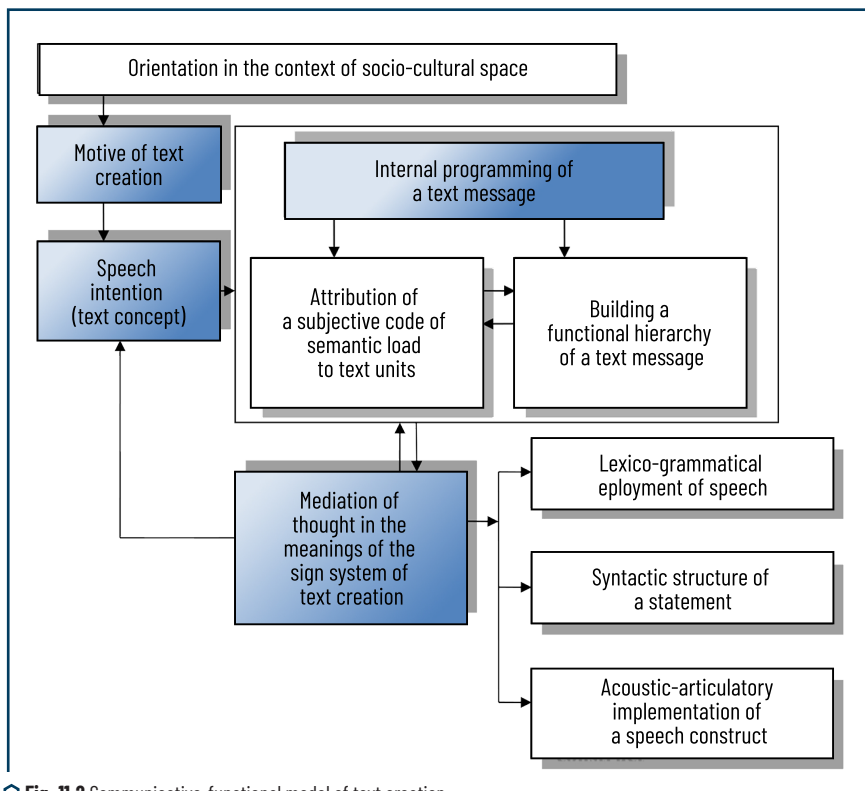


Fig. 11.2 Communicative-functional model of text creation

The driving force of modeling an expanded text, according to the theoretical concepts of the activity approach, is the motivational component, which determines the formation of a pragmatic type of text message. The motive means the need to convey certain information to another person, establish contacts or affective discharge; the motive causes the formatting of the message idea as a diffuse (general) logical-semantic scheme of the predicted statement.

Recoding of the idea and production of the generative scheme of a text message (logical-grammatical form) occurs using the internal speech programming mechanism, which includes the original idea in the system of language grammatical codes and actualizes the grammatical matrices of building a text statement previously learned by the subject of speech. Internal, "operational" mechanisms of speech activity determine dynamic markers of modeling a text message, in particular, the speed of planning a text

construct, automaticity of response, analytical comparison of the result (text) with the intention, hierarchical organization of the message, etc. The most typical case of metacognitive modeling of a text formation code is a secondary visual image-scheme of the message. External speech unfolds in the format of the aforementioned, its constructs determine the subjective significance of the statement and determine the general logic of a text formation, which can vary widely depending on the nature of the text message and the psychological characteristics of the speech activity subject.

Grammatical and semantic dimensions of the implementation of the internal program of a text message express the translation of the idea (logical scheme) of the statement into an objective continuum by replacing the units of the subjective code with a set of semantic features of the sign (word, picture, graphemes, etc.), creating a complex of hierarchically organized units of the objective-speech code. At the stage of syntactic design of the text construct, a linear distribution of the code units of the statement is carried out, the place of each element of the complex of hierarchically organized units in the syntactic scheme of the statement is determined, grammatical meanings are assigned, a set of semantic and acoustic-articulatory features is determined (syntactic prediction). The implementation of the syntactic control function ensures the coordination of the created version of the statement with the program, context, situation, if necessary, a return to previous stages and correction of the speech product occurs. Acoustic-articulatory realization of a text message connects speech formation with the voicing of an utterance [1, 7, 16]. And therefore, the text appears as a product of speech activity with a clearly defined psychological contour: the psychological conditions of the integral conception and implementation of speech (system hierarchy of predicates), individual-psychological and activity features of the subject of speech are objectified in the text message. Text creation itself occurs through the mediation of such metacognitive mechanisms as: comprehension (establishment or reproduction of semantic connections of the message, establishment of semantic supports or creation of equivalent replacements, etc.), anticipatory reflection (in the form of probabilistic prediction), mechanisms of memorization and specific mechanisms of speech generation (operational, sense-forming, phonational, etc.). Thus, speech appears as a means of self-expression, conscious identity of the speech personality in the coordinates of sociocultural interactions of the information environment.

A special mode of producing text messages included in a life situation for the purpose of communication is the acquisition of a foreign language (Second Language). In a complexly structured bilingual environment of a combination of constructs of the native and foreign languages, foreign language texts are built by the linguistic personality according to a similar metacognitive model of subject-subject interaction. At the same time, the culture of bilingualism requires the expression of parallel (rather than sequential) activation of all levels of text creation with a coherent representation in time of all links (planning, programming, internal linguistic organization of the content plan) of speech. Mastering bilingual skills is based on the coherence of vectors of lexical-grammatical and semantic competencies (such as memorizing and understanding speech constructs of a foreign language – Lower Order Thinking Skills (LOTS)) and the ability to analyze and compare language constructs, model text messages (Higher Order Thinking Skills (HOTS)) in an interdisciplinary language space.

In general, a wide range of linguistic, psycholinguistic and psychological studies indicate a different continuum of analysis of foreign language text messages. The most widely used interpretations of texts are:

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standardized coherent sequences of verbal and non-verbal signs that together perform the communicative function in a foreign language space (R. Brinker, St. Pappert, H. Cölfen, M. Heinemann, W. Heinemann [5, 10–12]), as well as formations characterized by relevance, efficiency, practical orientation, secondariness, intertextuality, despecialization, orientation on the recipient's background knowledge, conciseness and cyclical repetition of topics, and functioning against the background of their doublet terminological descriptions (K. Serazhim, J. Kijko, L. Makaruk et al. [1, 13–17]).

In the context of this study, a text message is considered by us as a syntagmatic linguistic construct, coherent in content and form, that represents a certain thematic discourse, contains the necessary lexical and grammatical material and expresses the communicative ability of a linguistic personality to conduct a dialogue (or polylogue), and in particular – in a foreign language. A linguistic personality, accordingly, appears not only as a carrier of linguistic competence, but also as a carrier of the intellectual (metacognitive) ability to create new knowledge, text formations on the basis of the accumulated experience of mastering a foreign language.

## 11.2 POLYMODAL CONCEPTS OF TEXT CREATION IN METACOGNITION DIMENSIONS

The complexity and nonlinearity of mastering a foreign language in the globalized sociocultural space of a bilingual (or even multilingual) information society consistently fits into the linguosynergetic paradigm of the development of multimodal language competencies of the individual (H. Cölfen, F. Hermanns, M. Halliday, J. Kijko, N. Tokareva, M. Tsehelska, L. Makaruk, etc. [1, 3, 5, 7, 14–17]).

Among the productive strategies for understanding and independent modeling text messages in a foreign language, models of invariant-variative text creation based on the extrapolation of cognitive-discursive and fractal approaches attract attention. The most expressive metacognitive strategies for producing text messages are presented in the system of cognitive-discursive logic (M. Halliday, G. Kress, T. van Leeuwen). The result of discursive activity is the generation of a text (or a complex syntagmatic construct), which is created according to the conventional rules adopted in the bilingual communicative segment of linguistic discourse in accordance with the preferences of the modern sociocultural space [7–9]. Thus, the text modeled by means of a foreign language appears as the result of the integration of metacognitive processes (perception – memorization – comprehension and structuring of information) [2, 3] and discursive practices in the continuum of a certain contextual modality of different types of mental representation of meanings [8, 18]. Therefore, text creation, according to the philosophy of cognitive-discursive modeling, is considered as a sign process that encompasses at least three dimensions:

- syntactic, which denotes markers of analysis and interpretation of determinants of the logical-semantic sequence of the text, fixes the connections between syntagms in the structure of the general sign system of the text;
- semantic, within which the connection between the features of the systemic-functional metaphor and its meaning (the internal sense-forming plane of the thematic construct) is reflected in the structure of the sign process;

– pragmatic – fixes the relationship between the sign and its interpretative variations in the structure of the speech process [18].

In this context, we share the opinion of N. Nolubenko in it, the starting point for identifying implicit meanings and activating mental mechanisms of implication (inference), replenishment (restoration) and modeling (metaphorization) of the denotations of a text message is the correlation of the explicit denotation with the intended content of the communicative act [18]. This becomes especially important in bilingual situations that require analysis, subjective assessment and coding/decoding of language symbols and signs, semantic and grammatical structures of a text message, taking into account the socio-cultural context reflected in the thematic field of the speech message. Accordingly, the discursive (or more precisely, cognitive-discursive) format of relevant analysis and production of texts in a foreign language involves the delineation in the text formation of such contextual circumstances as: time, location, event/action, participants; it is also worth considering additional categories of semantic structures, in particular: the domain of activity, the role of the discourse participants, social relations between the participants [18]. Therefore, any text acquires individual expressiveness, genre originality not so much due to the ability of the linguistic personality to operate with lexical-semantic formants of the language (LOTS), but rather due to the competent metacognitive modeling of textuality that reflect the system of knowledge, views, thoughts of the personality (HOTS), express the variable codes of his/her worldview.

The principles of fractal modeling of logical-semantic structures of text messages also open up a wide scope for understanding the problematic aspects of nonlinear systems of psycholinguistic knowledge, highlighting text creation as a way of visualizing complex phenomena, as well as as a tool that facilitates the understanding and perception of the large-scale invariance of linguistic phenomena (for example, the study of polymodal resources of text creation in the works of J. Kijko, L. Makaruk, et al. [14–17]).

The philosophy of the fractal approach (the term "fractal" (from the Latin *fractus* – crushed, fragmented) is used to denote self-similar structures, in which individual parts are to some extent similar to the whole, and the structure of the whole is reflected in its parts, is based on the recognition of the co-dimensionality and recursion of fractals, the extraordinary structures of which can be reproduced using recursive procedures. The extrapolation of the fractal approach to text message modeling denotes the metacognitive level of texts as units of the language system, which is based on the principle of invariant-variative taxonomy of text messages:

– universal invariant (logical-semantic, grammatical and/or syntagmatic scheme of text architecture) specifies the dimension of multi-scale recursive information self-similarity of the textual mode, reflects the general pragmatic characteristics of a text formation and established rules;

– variable content of the message expresses the text design, testifies to speech-thinking differences in the methods and means of modeling texts (microstructural dimension of the fractal perspective), demonstrates different configurations of author's comprehension and interpretation of content descriptions, addition of a given or own story, formulation of a conclusion or provision of an argued assessment, etc. (macrostructural dimension of the fractal perspective) [14, 15].

This creates the necessary prerequisites for the reconstruction of both universal (invariant) mechanisms for producing texts in a foreign language (Second Language), and authorial (variative) sentences

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independently modeled by the subject of linguistic activity (in particular, when learning English as a foreign language). At the same time, traditionally fixed foreign language teaching programs have become oriented towards the passive-mechanistic architecture of formatting experience, which reflects primarily the completeness and accuracy of perception and reproduction (recall) of information in the LOTS coordinates, rather than the development of competent solutions to semantic, problematic tasks in the discourse of the language being studied (in the continuum of HOTS). At the same time, only the awareness of the resources of metacognitive activity by the foreign language education student guides the modeling of cognitive-discursive reality, allows coherently to perceive, store and reproduce information, consciously plan and predict the results of cognitive actions, generate vectors of a winergetic worldview taking into account invariant-variative scenarios of speech activity [3, 4, 14, 18]. Therefore, learning a foreign language in the realities of the cross-cultural cycle of civilization development first of all requires the recognition of the axiomatic scenario for the development of the language consciousness of education applicants, the formatting of the individual's metacognitive skills – the ability to independently build the semantic structure of a speech utterance, understanding the textual constructs of a foreign language and coherent modeling of one's own utterances [3].

Recognizing metacognitive activity as a basic predictor of the regulation of intellectual activity by foreign language learning subjects, as the fundamental content of the development of text production skills in the coordinates of the taxonomy of cognitions, it is worth considering the following groups of critical markers, such as:

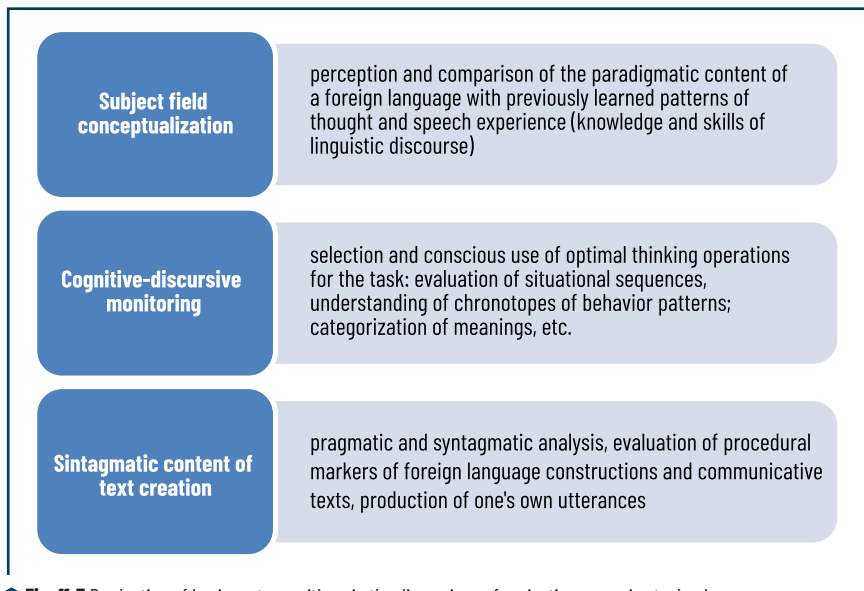
1) metacognitive knowledge: awareness and metamemory of the individual regarding his/her own identity, understanding of the principles of the world order, universal knowledge about human interaction. An important role is also played by the understanding of the cognitive (or educational) task, its contextual characteristics and available solution strategies. The level of students' awareness of the systemic and functional resources of metacognitive regulation of cognitive experience determines information processing strategies, dimensions of planning, monitoring and control, awareness of markers of critical evaluation and cognitive reflection;

2) metacognitive skills: skills of self-regulation, monitoring and control of interactive aspects of cognitive processes, the individual's ability to make a decision and choose effective metacognitive strategies for solving a problem. In particular, the skills of metacognitive information processing are considered by R. Tarricone [19] as a necessary condition for effective teaching of students of different age groups.

At the same time, it is worth recognizing the coexistence in the modern bilingual space of numerous scientific and didactic explorations of foreign and domestic scientists on identifying resources for optimizing the content formation of academic competencies in a foreign language. In particular, the systematic scientific linguistic and psycholinguistic developments of the authors of this project (for example: [1–4]) prove the validity of projective-recursive technology in organizing English language teaching in the mental space of cultural dialogue.

Taking into account active scientific discussions in the field of defining the logical sequence of metacognitive modeling of the bilingual experience system of language consciousness carriers, we consider it quite appropriate to specify the conceptual segment of the research paradigm. We consider recursion (from

the Latin *recursio* – "return") as a predictor of metacognitive activity of educational space subjects, which allows building an individual cognitive map of a person's cognitive experience, creating "embedding" of some ideas into others on the border of objective stimuli (external educational instructions and repetitive fractals of foreign language discourse) and subjective (internal, internalized) schemes of understanding [2, 3]. In this context, mastering a foreign language expresses not only the reproduction of a foreign language segment of experience, but also directs students' cognitive interest to the balanced production of informative constructs in order to achieve the planned goal (Fig. 11.3).



◊ Fig. 11.3 Production of basic metacognitions in the dimensions of projective-recursive technology

Thus, the cognitive-discursive paradigm of learning a foreign language and the projective-recursive technology of building metacognitive skills in the context of the above appear as a tool that opens up a fractal-recursive psychological reality for a person, contributes to the development of personal reflexivity and the improvement of the resourcefulness of communicative feedback, necessary for the implementation of metacognitive monitoring and assessment of the acquired language experience by students, and its rethinking in the perspective of bilingual text creation (Second Language) [3].

The metacognitive potential of projective-recursive technology is visualized most clearly in the architectonics of polyvector integrative studies of text creation in a multimodal perspective (for example, the research by G. Kress, N. van Leeuwen, J. Kijko, N. Tokareva, M. Tsehelska, L. Makaruk, and others [3, 8, 15–17]). The Content and Language Integrated Learning (CLIL) system model, which reveals the multimodal perception of a foreign language as a tool of cognition (language of learning), a means of communication (language

for learning), and a subject of study (language through learning), is recognized as an example of the systemic-functional content of the integrative approach in the practice of teaching English, taking into account the concepts of metacognition. CLIL allows not only to guarantee that students master the lexical and grammatical level of a foreign language, but also stimulates the internalization of foreign language culture and the development of students' metacognitive abilities (D. Coyle, Ph. Hood, D. Marsh [3, 20]), which to a certain extent harmonizes the synergies of the mental, cognitive-discursive and perceptual-interactive segments individual's cognitive activity.

Original results were also obtained when applying the Integrated Literacy Development Approach (ILDA) model in the practice of teaching English, which is based on the integrative unity of lexical-grammatical, syntagmatic, cognitive-discursive, genre and interdisciplinary codes of foreign language acquisition in a bilingual educational space. The ILDA philosophy was built taking into account cognitive psychology (primarily Bloom's Taxonomy [2, 4], P. Tarricone's Taxonomy of Metacognition [19]), systemic-functional linguistics (in particular, the conceptual positions of M. Halliday's theory [7]) and the principles of projective-recursive technology with the involvement of metacognitive reference schemes (N. Tokareva, M. Tsehelska [2]) with a combination of the theory of multimodal metaphor (S. Forceville [21]) and systemic-functional visualized grammar and/or syntagmatics (G. Kress, N. van Leeuwen [8]).

The ILDA logical-semantic scheme actualizes the need to expand the metacognitive and communicative significance of the convergence of verbal and non-verbal ways of encoding information in text format. In the scope of this study, we aim to focus primarily on the combinatorics of lexical and grammatical resources of text creation and metagraphemics of non-verbal messages in the system of ergonomic use of metacognitive schemes in teaching English as a foreign language.

### **11.3 MULTIMODAL RESOURCE OF METACOGNITIVE SCHEMES**

Symbiotic scenarios of information flow collage in the modern dimensions of postmodernity determine the increasingly widespread use of polycode formations, and in particular – in the system of teaching a foreign language in a bilingual environment (for example: Ukrainian as a native and English as a foreign). The multimodality of linguistic discourse, as recognized by linguists (see research: G. Kress, K. O'Halloran, V. Smith, S. Forceville, L. Makaruk [8, 17, 21, 22]), expands the boundaries of speech, increases the semantic continuum of text messages due to additional visual and/or audio semiotic modes (symbols, images, compilation of fractals, etc.). The most represented in the glossary of multimodality is the recognition of this phenomenon as a form of presentation of certain information and the creation of a corresponding discursive meaning through a combination of resources: printed text, situational experience, diagrams and drawings, audio recordings (speaking), etc. [22]. In the context of this research project, we are absolutely agree with the opinion of L. Makaruk, who notes that in the architectonics of the multimodal meaning of a text construct, the following factors are worth paying attention to: the selection of lexical units, their graphic representation, the involvement of appropriate illustrations and their location, etc. The indicated resources contribute to the construction of the original text (poly-coded textual), facilitate the perception and

understanding of the text – in accordance with the priority principles of modern text creation: ergonomics and visualization of content in conditions of rapid life creation [16, 17]. This once again confirms the dynamic nature of the language functionality (as an open mobile system) in the context of socio-cultural evolution of social development, because in the space of total globalization and digitalization of the world order, language acquisition (and a foreign language in particular) moves away from the fundamentalism of sequential processing of linear printed text and is directed towards recognizing the relevance of a multi-vector format for understanding multimodal (or polycode) text information at the level of substantive understanding of a holistic text message.

The polymodal taxonomy of mastering the skills of producing texts in a foreign language allows for an integrative approach to the text creation system, combining the theoretical-deductive and empirical-inductive continua of message creation in the context of bilingualism. The theoretical-deductive aspect allows for the acquisition of the normotypical paradigmatics (invariant scheme) of foreign language speech maxims. While the empirical-deductive approach expresses the variability of linguistic constructions, taking into account the author's intention or situational vision of the message design.

An example of successful metacognitive modeling of text messages in the dimensions of English language learning is the metacognitive schemes developed by the author team (Fig. 11.4) – a formalized visualization of the fractal structure of the invariant and the variable possibilities of deploying the syntagmatic structure of a text message.

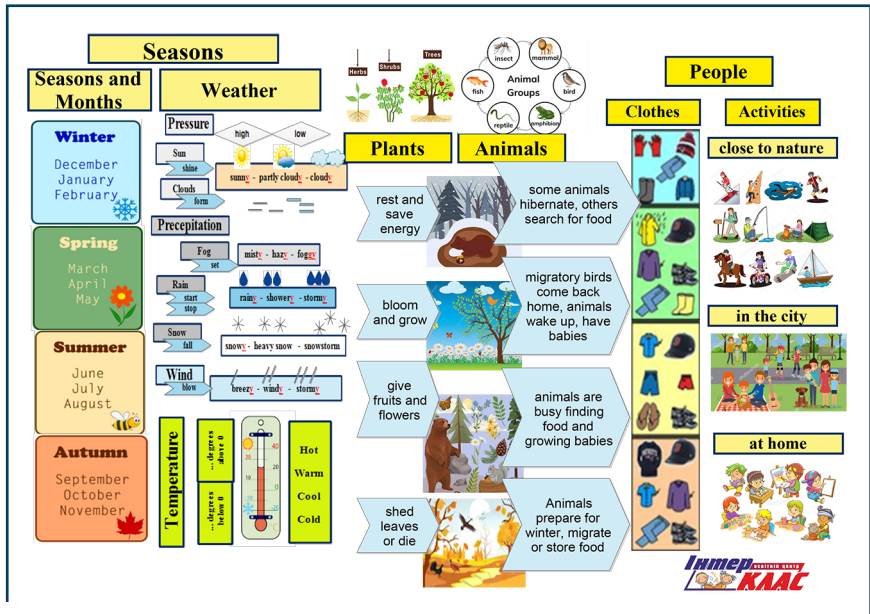


Fig. 11.4 Example of the thematic cognitive scheme "Seasons, Weather, Plants, Animals, People"

A complex of such metacognitive schemes (or thematic maps), developed with the involvement of projective-recursive technology, is used for a long time on the basis of the private enterprise "Educational Center "Interklas"" (Kryvyi Rih, Ukraine), certified as an institution of extracurricular education of the humanitarian direction [2, 4].

In our understanding, metacognitive schemes appear as functionally appropriate polycode texts in teaching a foreign language, combining the resources of the natural language code with the codes of the visual semiotic system (images of the subject field, schematized vectors of connections between concepts (text design), etc.). Accordingly, the metacognitive scheme is interpreted as a multimodal invariant-variant text formation that expresses the macro- and micro-level structure of the text, taking into account the fractal perspective of the cognitive-discursive segment of a foreign language in the conditions of a bilingual speech culture. The basis of the schematic representation of the metacognitive space of the functioning of a certain construct is the multi-scale recursive structural self-similarity of a text formation – the fractal – according to the ILDA model (**Table 11.1**).

● **Table 11.1** Levels of the recursive cycle in working with metacognitive schemes (**Fig. 11.4**) (in the ILDA model architectonics)

Level	Metacognitive tasks	Metacognitive mechanisms	Activity examples
1	2	3	4
Conceptualization and systematization of the subject field of meanings ( <i>vocabulary &amp; concept mapping</i> ) LOTS: Remember – Understand	Perception of basic lexemes, understanding the connection between word and image; operating with logical categories	Perception (recognition of features), cognitive organization of information (grouping of features), awareness of connections	<i>Match</i> → <i>Categorise</i> → <i>Label</i> "Which things belong to winter? Why?"
Thematic map structured by: – seasons and months; – weather (pressure, precipitation, wind, temperature); – plants (seasonal changes); – animals (behaviour patterns); – people (clothes, activities)			
Cognitive level ( <i>comparison and explanation</i> ) LOTS → HOTS: Apply – Analyse	Development of thinking operations (from recognition to analysis and synthesis)	Monitoring, control of cognitive competencies for structuring experience	Answers to questions with explanations of reasons: "Why do trees shed leaves in autumn?" "What happens to animals when it's cold?"
Working with the map, students: – observe, compare seasons ( <i>noticing</i> ); – analyze, explain cause-and-effect relationships ( <i>reasoning</i> ); – analyze the behavior of animals, people (model short descriptions); – compare clothing, weather and people's activities (demonstrate understanding of the relationships between the predicates of the phenomenon)			

◆ Continuation of Table 11.1

1	2	3	4
Linguistic (generalization and description, narrative) HOTS: Analyse – Evaluate – Create	Development of logical thinking and academic literacy, formation of argumentation skills ( <i>because... but...</i> )	Analysis of language structures, modeling of coherent utterances, text, reflection on language experience	A2 speaking: "What's your favourite season? Why?" A2 writing: "Write 35–45 words about what people do in your city in summer"
<p>The map allows you to create extended statements that meet the requirements of KET A2:</p> <ul style="list-style-type: none"> <li>– description of the weather;</li> <li>– description of the seasons;</li> <li>– description of activities, occupations of people with an explanation of cause-and-effect relationships and interpretation of consequences (<i>interpreting</i>);</li> <li>– short factual texts with a variable development of the story (<i>creating</i>)</li> </ul>			

Thus, the use of the heuristic potential of the educational and developmental complex of metacognitive schemes, built in the dimensions of a generalized idea of a certain language field, ensures the stability of speech patterns and updates the vocabulary, improves the skills of categorization and classification of lexemes, optimizes the skills of structuring the thinking of education seekers, contributes to the formation of reading, speaking, and listening skills, thereby expressing the basic levels of the recursive cycle and formatting strategies of metacognitive self-expression.

The logical sequence and complementarity of basic mental schemes allows for the variably use of different combinations of this toolkit in teaching a foreign language.

For example, the sequential "unpacking" of individual semantic fractals of the ILDA model works effectively, such as: actualization of the resource of the "Free Time Activities & Clothes" scheme (**Fig. 11.5**) as a "packed information", embedded in the broader content of the mental scheme "Seasons".

Working out the cognitive-discursive scenarios of the "Seasons, Weather, Plants, Animals, People" scheme, students simultaneously actualize previously studied categories expressed by the blocks "Clothes", "Activities", "People in different contexts (close to nature/in the city/at home)" of the mental scheme "Free Time Activities & Clothes". Thus, in the fractal perspective of the cognitive-discursive segment of a foreign language, the mental scheme "Seasons, Weather, Plants, Animals, People" appears as the upper level of generalization of the "Free Time Activities & Clothes" content. The architecture of the logical-semantic scheme of mastering a foreign language in the continuum of this subject field is built in the following semantic design:

- upper level – categorical resource of the mental scheme "Seasons" (contextual paradigm markers are generalized, characterizing indicators of the environment and conditions of a natural phenomenon);
- middle level – fractal segment "People", which is expressed through the definitive blocks "Clothes" / "Activities" and structures the categories of the world order;
- lower level – conceptual maps "Free Time Activities" and "Clothes", which denote lexical fields, word formation models for invariants of grammatical structures [2–4].

As a result of the recursive cycle of mastering the semiotic continuum of the specified subject field, a logical invariant system (Robust Construction) of language competencies appears, which integrates the

dimensions of perception, thinking, and speech in a holistic pattern and forms the basis for further (varia-  
 tive) development of text creation skills (Table 11.2).

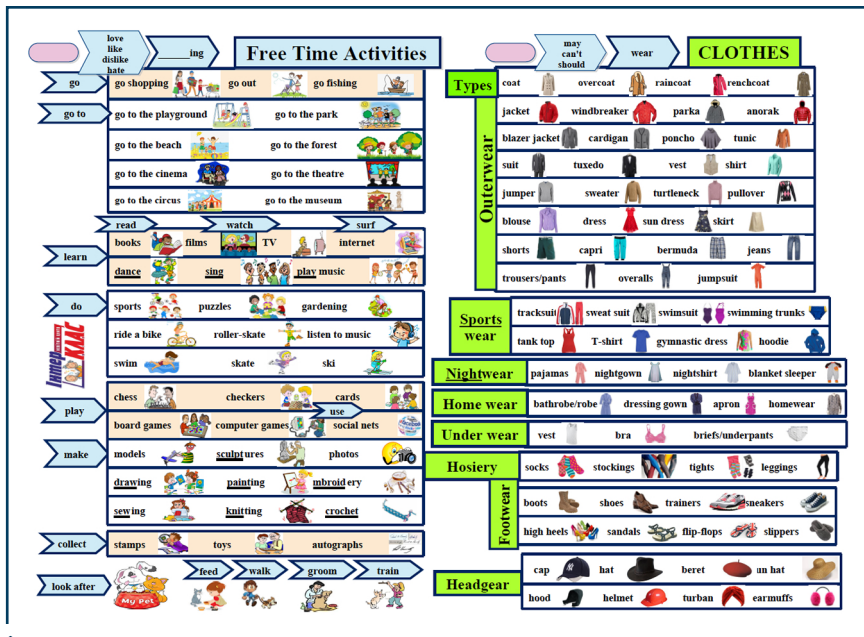


Fig. 11.5 Example of the mental scheme "Free Time Activities & Clothes"

Therefore, each metacognitive scheme functionally provides ordering and categorization of semantic markers of a certain subject field, coordinates grammatical and syntagmatic connections between segments of foreign language discourse at the levels of LOTS/HOTS constructs. Thus, metacognitive schemes contribute to effective and conscious structuring of information, understanding of logical dependencies and coordination of elements of mental denotative graphs of different orders in systems of expansion (linguistic recursion) of the concept sphere of the studied language patterns.

Multimodal constructs of metacognitive schemes (conceptual-grammatical, algorithmic, polyvector mind maps [2]) contribute to the actualization of the necessary information that is lacking for students to build a logical-semantic formula of a text construct (new, forgotten or insufficiently mastered), enable the formation of a cognitive style and define heuristic strategies of metacognitive activity of the individual. Complex layouts of metacognitive mind maps allow to generalize language fields and combine them into integral syntagmatic modules, which allows students to more consciously use pragmatic invariants of linguistic discourse and gain experience in the variable use of a foreign language in the polyvector continuum of syntagmatic formations of bilingual (or multilingual) culture. Therefore, teaching English using the ILDA model and a complex of metacognitive schemes determines the formatting of the open space of mental activity,

provides an understanding of the amplification tendencies (deepening and enrichment) of the individual's metacognitive development in the plane of continuous mental formation of activity subjects on the path of internalization of the information model of the pragmalinguistic formula of foreign language discourse.

● **Table 11.2** Example of developing text creation skills (resource: "Seasons, Weather, Activities, Celebrations" Speaking Part 1 Level 6)

Question	Simple answer	Expanded answer
1. What season do you like?	Transformation + Present Simple: <i>My favourite season is _____</i>	Reason (weather/ clothes/ activities): <i>because _____</i>
2. What is the typical weather for the season?	Mostly: <i>Mostly the weather is _____</i>	Sometimes + lower probability: <i>But sometimes there may be _____</i>
3. What activities do you enjoy in this season?	Gerund (Ving): <i>In my opinion this weather is good for _____</i>	Reason + Modal (may/can't) + Infinitive: <i>So you _____</i>
4. How does nature change in this season?	Present Simple: <i>Plants _____</i>	Add: <i>Also, animals _____</i>
5. How do you feel in this season?	Frequency adverbs: <i>always, often, sometimes, rarely, never:</i> <i>I often _____, however, I never _____</i>	
6. What is your favourite celebration in this season?	Transformation + Present Simple: <i>I really enjoy _____, which is _____ (holiday)</i>	Ways of celebration: <i>which is celebrated _____</i>

At the same time, fractality (as a principle of modeling the multi-scale and multi-level structural self-similarity of a subject field of a certain modality) allows, in an ecological manner, in the order of non-discriminatory education, to form in students the skills of tolerant (invariant-variative) modeling and representation of such a macro-sign unit as a text in their own speech, at the main stages of its content construction – from mastering the vocabulary base to the final semiotic product – a holistic text formation (Academic Literacy & Genre). Thus, the visualization in a holistic metacognitive scheme of the sequence of formal-logical modeling and grapheme structuring of logical-semantic constructs of a foreign language order expands the resource potential of this toolkit and allows students to develop metacognitive activity, practice coherent speech skills (Speaking Part Level 1-2 & Writing Part level 7-8) at different levels of the fractal discourse model, produce image descriptions and reasonably express their own thoughts in the form of structured texts.

#### 11.4 DISCUSSION OF THE RESULTS OF SECTION 11

The generalization of the systemic dimensions of the organization of teaching English as a foreign language allows us to state the need to change the principles of didactics in the modern globalized and

information-saturated socio-cultural environment. This is primarily due to the trends in the intellectual development of students in the 21<sup>st</sup> century, expressed in clip thinking and rational ergonomics of metacognitive activity in conditions of prolonged uncertainty. The Internet generation of the postmodern era is focused primarily on the perception and comprehension of clearly structured information content, supported by visual visions of pragmatic discourse without complex formalized constructions of logical proof. This leads to the depreciation of text-creation registers by modern youth, the partialization of language segments and the impoverishment of variant scenarios of language discourse. At the same time, the new generation of the high-tech era is able to successfully solve complexly structured, multi-level tasks, including when learning English as a foreign language. Therefore, multimodal formants of the metacognitive and bilingual personality development in the modern dynamic information society should be recognized as ambivalent system-forming constructs of educational innovations. Instead of memorizing texts-samples of the language product, learning a foreign language should become a dimension of the metacognitive personality development, focused on modeling foreign language discourse, taking into account the communicative goal and situational coordinates of interaction in the bilingual space.

Mastering a foreign language in the modern information society should be considered in the architectonics of understanding, adequate interpretation of meanings and production of texts of various genres in order to achieve the communicative intention of the linguistic personality in the dimensions of a specific interaction situation and extralinguistic contexts of life-creation.

One of the scenarios for effective teaching of English as a foreign language is the integrative system-functional approach to the educational process (ILDA) with the involvement of projective-recursive technology and metacognitive educational schemes of invariant-variative linguistic discourse created on its basis. Multimodal metacognitive schemes allow us to visualize the sequence of composing and paraphrasing sentences in a foreign language, contribute to the ordering of syntagmatic constructions, form the skills of establishing and varying logical-semantic connections between concepts, and mastering algorithms for building linguistic maxims. Cognitive-discursive polycode practices of foreign language acquisition are based on the ability of a linguistic personality to invariantly format information in coherent speech in accordance with the logical-semantic and grammatical constructs of a particular language, and also determine the ability to produce variable (author's) text formations in order to express one's own thoughts using the acquired linguistic signs and the rules of their combination. Predictors of the linguistic picture of the world and the content characteristics of metacognitive activity, perceived by the subject of learning, determine the vectors of self-expression and self-realization of a person in the multimodal space of bilingual text creation.

Presenting to the scientific community theoretical and methodological developments on the architectonics of metacognitive modeling of text formations in foreign language learning, the authors are fully aware that this study does not reveal all aspects of the problem of using metacognitive schemes in the continuum of projective-recursive technology of English language teaching, but it opens up prospects for further study of trends in the multilingual personality development in the changing information world.

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## CONCLUSIONS

Based on the research conducted, the following results have been identified:

1. One of the main factors for achieving effectiveness in the study of any academic discipline in distance learning is the teacher's ability to organize pedagogical communication with students and achieve mutual understanding. The most important factors necessary for achieving successful learning outcomes in modern educational realities have been identified: an individual approach to each student, the creation of a favorable and supportive learning environment, the development of independence and responsibility in students.

2. The importance of possessing cultural intelligence as a predictor of effective online and offline interaction in multicultural groups of foreign students studying in higher education institutions outside their country has been proven. In a technical institution of higher education, the development of these components should be integrated into the process of learning foreign languages through the close relationship between languages and cultures, and carried out by both traditional and digital methods (audiovisual translation method), ensuring the multimodality of modern education.

3. It has been proven that a complex combination of methodological, methodical and practical approaches ensures the holistic formation of students' professional terminological competence, which meets the requirements of the digital transformation of higher education in Ukraine and takes into account the challenges of the educational system functioning in war conditions, contributing to the training of highly qualified and competitive specialists.

4. A holistic picture of the development of communicative soft skills in the digital environment has been highlighted and the leading mechanisms that ensure this dynamics have been identified. The changes recorded in emotional intelligence and communicative reflection indicate the formation of a more adaptive style of interaction in students, based on internal self-regulation, attentiveness to one's own experiences and analytical understanding of the situation.

5. According to the results of theoretical analysis and empirical research on the problem of social intelligence, perception and self-presentation in digital communications, it has been found that social intelligence, reflection and empathy form a holistic cognitive-emotional system that provides conscious regulation of interpersonal interaction and self-presentational activity in virtual space. A hierarchy of influences and cause-and-effect relationships between constructs has been established, which clarifies the place of social intelligence in the structure of social interaction and expands modern ideas about the psychological factors of self-presentation in digital communications.

6. Pedagogical conditions and specific technologies and methods of learning are presented, which, when implemented in the educational process of a HEI innovative educational environment, will contribute to the development of students' research competence. It has been proven that conducting research activities under certain conditions activates students' awareness of their own position, forms skills of discussion, argumentation, tolerant exchange of opinions, develops a scientific worldview, systems thinking, information analysis skills, promotes the development of leadership qualities, civic activity, ethical responsibility, etc.

7. Based on the analysis of the idea of hybrid pedagogy, which involves the joint activity of humans and artificial intelligence, when AI is responsible for performing routine tasks, and the role of a facilitator within the integrated human-AI system is performed by the human brain, the concept of pedagogical scaffolding has been substantiated as a means of supporting applicants at all stages of the intercultural competence formation.

8. The effectiveness, feasibility and advantages of using GenAI in language training of foreign citizens at the initial stage of education have been proven. The areas of application of this advanced technology and promising aspects of its use in language education (personalized and adaptive learning, knowledge assessment, intermediate testing, gamification of the educational process), the development of other innovative approaches using various programs and applications have been considered.

9. Based on practical modeling of didactic scenarios focused on the use of neural network technologies, it has been proven that the introduction of AI tools in teaching Ukrainian as a foreign language significantly increases the effectiveness of the learning process. The emphasis on studying the evaluative potential of language units, in particular adjectives, as well as the analysis of atypical, deviant forms of their use, makes it possible to create conditions in the classroom that are as close as possible to a real communicative environment, which is ensured by the ability of the AI model to provide detailed, multidimensional feedback on grammatical correctness, lexical diversity and stylistic accuracy of the statement.

10. It has been proven that business communication culture increases the general level of professional culture of a future banking specialist and contributes to further professional development and self-realization in work. The results of the pedagogical experiment confirm that the most effective method of forming business communication culture is the use of training technologies that combine a complex of interactive types of educational activities and are aimed at personal and professional improvement.

11. The metacognitive resources of modeling text messages using projective-recursive technology in teaching English, the essential dimensions of communicative discourse and text as its basic element have been analyzed. The role of recursive mechanisms in organizing thought-speech patterns and ensuring productive feedback in bilingual communication situations is substantiated. The effectiveness of using metacognitive schemes in the logic of projective-recursive technology in teaching English has been proven.

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PSYCHOLOGICAL-PEDAGOGICAL AND LINGUODIDACTIC PROBLEMS OF LANGUAGE EDUCATION UNDER  
CONDITIONS OF SOCIETY DIGITAL TRANSFORMATION

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