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## A COMPUTER ORIENTED MODEL OF BLENDED LEARNING OF THE ENGLISH LANGUAGE

**Purpose.** An analysis of the experience of introducing the blended learning model in the process of learning English by students of a non-linguistic university in terms of the place of this model in the educational process, the relevance of its use in modern higher education conditions, defining basic criteria and requirements for the participants of the educational process to ensure the effective implementation of blended learning and determining conditions for the successful organization and control of training within the framework of the blended learning model. Qualitative and quantitative analysis of the results.

**Methodology.** The analysis was carried out in the context of modern methodological concepts and theories: the general theory of education, the theory and methodology of using active teaching methods, the theory and methodology of using distance learning, the methods of using information and communication technologies (ICT) in the educational process, and others. The study is based on a systemic, competency-based, and individual scientific approaches. In the course of studying the experience of introducing the model of blended learning into the educational process, the following methods and techniques were used: study and comparative analysis of the available theoretical and practical literature on the issue under study, methods of deduction and induction, systematization, quantitative analysis of the results, method of expert evaluation, generalization.

**Findings.** With the help of testing, the initial abilities of working with interactive technologies of the participants of blended learning (students, teachers) were established, on the basis of which the preparatory and familiarization part of the training course was planned. A qualitative and quantitative analyses of the learning outcomes at the initial, intermediate and final stages, as well as a comparative analysis with the results of students studying according to the standard system (without an online component) were carried out. Basic conditions and criteria for the successful use of the system of blended learning in higher education in our country are highlighted. The MOODLE training platform was tested, its convenience in terms of synchronous and asynchronous communication was investigated, its effectiveness in a blended learning model was confirmed. On the basis of the platform, an educational and methodological complex for teaching English to students in the framework of the blended learning model was developed.

**Originality.** It is required to modernize and optimize the educational system of Ukraine through the introduction of new programs, technologies and techniques. The request of modern society for the training of competitive specialists requires a paradigm shift in the education system and its reorientation from the presentation of material to the formation of future specialists' skills and abilities to use and operate this information in modern conditions. Blended learning is an actual model that allows not only giving the student certain knowledge, but also developing their ability to use it effectively in different communicative situations.

**Practical value.** The results of the study will be useful in the subsequent experience of introducing the blended learning model in the process of learning not only foreign languages, but also other academic disciplines, as well as when organizing independent work of students, online communication, conferences and other types of educational activities.

**Keywords:** *blended learning, education system, foreign language, information technologies*

**Introduction.** In the current conditions of the world community globalization, raising the standards of professional training of specialists and the need to ensure their competitive ability in the world labor market, the role of knowledge of foreign languages as the basis of intercultural communication increases significantly. The quality of teaching foreign languages in Ukrainian universities is given an increased consideration at the present stage. The use of advanced methods and technologies for teaching foreign languages and reformatting the whole educational process with the aim of optimizing is actively supported by the government of our country. The conduct of education in the 21<sup>st</sup> century has been witnessed with a paradigm shift from face-to-face teaching environment to a more technology-based learning environment. With new applications and learning platform, students are exposed to a more student-centred learning experience [1]. It is undoubted that modern era is characterized by an increased interest towards information. Reality today proves the fact that information technologies are

more and more often used in the higher education system, not only as additional tools in the sphere of education, but represent new functional rules and priorities of institutional structure in the process of higher education development [2, 3].

The Sustainable Development Strategy "Ukraine-2020", developed by the Ukrainian government, defines the teaching foreign languages quality as one of the main efficiency indicators of the education system reforms and emphasizes the importance of a new, high quality level of teaching English as a means of international communication (The Sustainable Development Strategy "Ukraine-2020", 2015). In order to stimulate the English language learning in Ukraine in 2016, President Petro Poroshenko signed the Decree No. 641/2015 "On announcing 2016 to be the Year of the English Language". The Ministry of Education and Science of Ukraine set a course for updating, modernizing both the teaching of foreign languages and the training of foreign language teachers, improving their skills, and introducing international criteria for assessing their professional level.

The development of new standards, methods, criteria and forms of evaluation, careful study and application of the expe-

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rience of foreign teachers in the field of intensification and optimization of the educational space, training of qualified specialists in various fields with a high foreign language competence are gaining currency nowadays. One of the main steps in the reforming of the education system of Ukraine was adoption of the law "On Higher Education" in 2014. It provides for the educational process internationalization, namely international cooperation of universities, participation in international educational and scientific programs, creation of joint educational and scientific programs with foreign universities, scientific institutions and organizations with the aim of acquaintance with world experience and its application in order to increase the level and quality of Ukrainian education up to the European level. On the basis of the law "On Higher Education" and the Sustainable Development Strategy "Ukraine-2020", various programs for studying and popularizing the English language, for international community and for attracting positive European and world experience in the educational process in Ukraine are being implemented, for example, such projects as "Go Global" TEMPUS, ERASMUS, the domestic educational online platform "Lingvo.skills".

The current system of teaching foreign languages in Ukraine is aimed at developing the skills of reading and translating foreign literature, but not at creating a communicative competence that is foreign speaking. There are also a number of other factors that slow the modernization of the education system, namely, the prevalence of outdated methods and approaches to the teaching of foreign languages, the low level of preparation of entrants, the insufficient methodological and technical equipment of the learning process, the weak motivational component of the educational process (traditional occupations are often perceived by students as routine), including the inflexibility of the educational space to the current social and economic situation, to the needs of the labor market and the students themselves. In connection with the economic crisis in our country, standard full-time education becomes an expensive process. For many people who are able and willing to get higher education, this fact makes it practically impossible. Many young people start working immediately after graduating from school, and daily attendance of classes on a strictly fixed schedule becomes problematic for them. In our region of Ukraine, Donetsk and Luhansk regions, the educational process since 2014 has been significantly influenced by the military situation. The ongoing conflict makes it difficult, and often interrupts the communication between individual settlements. The presence of roadblocks, the military operations in certain territories significantly complicate the regular university attendance by students.

The topicality of our pilot study is caused by the urgent need to improve the effectiveness of teaching foreign languages, to optimize the training system itself in order to ensure its flexibility, to facilitate access to training for persons with certain limitations (disabilities, IDPs, work during term-time, and others). The teaching staff of the language training department of Donbass State Engineering Academy (Kramatorsk, Donetsk region, Ukraine) faced the challenge of modernization and reorganization of the learning process with the purpose of its adaptation to the current conditions and the development of alternative forms of education. We carried out a critical analysis of the system of the learning process organization existing in our university, the methodological base and training standards. Simultaneously, the world experience and modern trends in teaching the Foreign Languages were studied. Of modern and actively used concepts of teaching foreign languages (distance learning, e-learning, blended learning, etc.) a model of blended learning was adopted as a basis for a new format of the learning process.

In the higher education structure, blended learning is understood as a form of learning, in which teaching is conducted both in the traditional form and using distance learning technologies. The concept of blended learning allows us to com-

bine traditional methods with modern information and communication technologies, without a complete rejection of the traditional model of full-time education, where speaking and socio-cultural skills of foreign language are practiced.

Recent research identifies the following key benefits of blended learning:

1. Opportunity for collaboration at a distance: Individual students work together virtually in an intellectual endeavour as a learning practice.

2. Increased flexibility: Technology-enabled learning allows for learning anytime and anywhere, letting students learn without the barriers of time and location but with the possible support of in-person engagement.

3. Increased interaction: Blended learning offers a platform to facilitate greater interactivity between students, as well as between students and teachers.

4. Enhanced learning: Additional types of learning activities improve engagement and can help students achieve higher and more meaningful levels of learning.

5. Learning to be virtual citizens: Learners practice the ability to project themselves socially and academically in an online community of inquiry. Digital learning skills are becoming essential to be a lifelong learner, and blended courses help learners master the skills for using a variety of technologies [4].

**Literature review.** The very concept of "blended learning" has come to the modern educational environment from American pedagogy and is not absolutely new. In the 1920 and 1930s, American schools used correspondence for communication between teachers and students.

Currently, despite the large number of existing interpretations of the concept of "blended learning", an obligatory component is the use of ICT in the educational process. For example, C. Graham defines blended learning as integration of face-to-face and online instruction [5]. T. Krasnova considers blended learning to be a method of teaching that combines the most affective face-to-face teaching techniques and online interactive collaboration, both constituting a system that functions in constant correlation and forms a single whole [6]. A. Bryan characterizes blended learning as an integrated learning experience that is controlled and guided by the instructor whether in the form of face-to-face communication or his virtual presence [7]. According to Oweis's definition, blended learning aims at interactive learning, resulting in the blending or mixing of a teacher's role in a traditional classroom with that in the virtual one. Blended learning also aims at using modern technology in teaching without abandoning the usual educational situation and classroom attendance. It focuses on direct interaction in the classroom through the use of modern communication mechanisms, such as computers, networks and Internet portals [8].

As modern researchers pointed out [8, 9], the use of the model of blended learning has many advantages, namely, it reduces time, effort, cost through the delivery of information to learners as quickly as possible [7], without diminishing student performance outcomes [10], and increases access to nontraditional and underserved studies by bringing a host of educational resources and experiences to those who may have limited access to on-campus only education [11].

The experience of implementing the blended learning model and studying the learning outcomes of this system, conducted by many scholars [12, 13], proved the effectiveness of blended learning at different stages of the educational process as a whole. For example, C. Dziuban notes that the received results indicate that blended learning maintains or increases access for most student cohorts and produces improved success rates for minority and non-minority students alike [11].

Some researchers [14, 15] emphasize that the use of blended learning also implies the professional development of teachers, requires them to improve pedagogical, methodological competencies, as well as the formation of skills to work with

ICT, online platforms, and other online resources [14]. M. Azukas assumes that effective implementation of blended learning involves the increase in teachers' self-efficacy by enhancing their confidence in several areas including planning for personalized learning and technology integration, risk-taking, making modifications for continuous improvement ... increasing knowledge of their students, improved technology skills, design and problem-solving skills and facilitation skills [9].

As the basis for the blended learning model we took the concept of American professors Graham S. and Bonk S., who distinguish three components of mixed teaching: teaching within the personal contact of students and the teacher in the form of traditional classroom lectures (F2F training); independent work of students, which includes various activities (search tasks on the Internet, web quests, and so on) without the help of the teacher; joint online learning, consisting of doing various tasks in the network, participating in webinars, web conferences, wikis, and others.

**Purpose.** Our experiment was conducted on the basis of the speciality "Computer technologies", in five groups of students of the 3<sup>rd</sup> year of study. The choice of this speciality is caused by good knowledge of computer technologies and developed skills in working with ICT of these students. In addition, the third year of study implies a certain competence in the knowledge of professional English, formed during the previous two years of training at the academy. It should be noted that in Ukraine, freshmen, as a rule, do not actively use computer technologies for educational purposes. The process of teaching foreign languages using computer and distance technologies is quite unfamiliar to first-year students. Most of them have been trained a foreign language using traditional teaching aids. The skills of working with ICT and certain language competencies greatly facilitate the process of introducing a blended system of training in the course "Professional English" and contribute to its successful implementation.

In the format of the experiment the teachers of the Language Training Department of Donbass State Engineering Academy (DSEA) set the following goals:

- to optimize and intensify the process of teaching foreign languages in the modern conditions of the educational space in Ukraine, in DSEA in particular;

- to develop an effective educational and methodical complex of blended learning in the subject "Professional English" for the speciality "Computer technologies" on the basis of DSEA;

- to introduce a model of blended learning English by the example of the discipline "Professional English" for the speciality "Computer technologies" on the basis of DSEA with the aim of optimizing and increasing the effectiveness of the learning process;

- to reveal the degree of efficiency of transition from the traditional system to the mixed form of teaching in the teaching foreign languages in modern conditions in technical universities of Ukraine by the example of DSEA.

Achievement of the set goals provided for meeting the following challenges:

- to study foreign and domestic experience of using the model of blended learning and application of information and communication technologies in the learning process;

- to study the level of mental, psychoemotional readiness of participants in the educational process to introduce a system of blended learning foreign languages;

- to study the technical awareness of all participants in the training (the availability of computers and related software, Internet connections);

- to study the peculiarities of organization of the blended learning process and development of the training methodological complex (TMC) based on the electronic platform Moodle;

- to develop the TMC on the subject "Professional English", including full-time forms of education and content of the Moodle platform;

- to test the developed course of blended training foreign language on the basis of five groups of the third year students of the speciality "Computer technologies";

- to analyze the obtained learning outcomes in order to determine the level of effectiveness of the blended model in teaching foreign languages implementation in this technical university, and also to develop recommendations for improving the components of the whole TMC and the organization of the learning process in general.

**Methods.** Our scientific experimental study was conducted in the context of the following modern methodological concepts and theories:

- the general theory of pedagogical education (Vygotsky L. S., Galperin P. Ya., Il'yasov I. I., Klarin M.);

- the didactic regularities and principles of learning (Andreev A. A., Zmeev S. I., Klarin M. V., Kitaygorodskaya G. A., Lerner I. Ya.);

- the pedagogical foundations of improving the content of education (Andreev A. A., Vachkov I. V., Zajnutdinova L. H., Zagvyazinskij V. I., Izotov M. I.);

- the theory, methodology and practice of using active methods in the educational process in higher education (Vachkov I. V., Emel'yanov Yu. N., Zav'yalova Zh., Klarin M. V., Kurbatova M. B., Li D.);

- the theory, methodology and practice of distance learning (Andreev A. A., Bersin Dzh., Vishtak O. V., Dzhoshems V., Koul M., Okolelova O. P.);

- the theory, methodology and practice of using active methods in the educational process in higher education (Vachkov I. V., Emel'yanov Yu. N., Zav'yalova Zh., Klarin M. V., Kurbatova M. B., Li D., Magura M. I.);

- the methods for using modern information communication technologies in the educational process (Alimov R. H., Borevskij L. Ya., Grigor'ev S. G., Zhdanov S. A., Kruglikov S. A.).

The scientific methodological basis of our experiment is based on the following scientific approaches:

- the systematic approach that considers blended learning as a holistic, dynamic and multi-level system;

- the competence-based approach, which provides forming of all types of students' cognitive and professional competencies;

- the personal approach is aimed at taking into account personal characteristics and abilities of students in order to ensure their self-esteem as a person and a specialist, self-development and self-improvement;

- the activity approach, which helps to increase the activity of students, makes them the main actors in the educational process, ensures the formation of skills of educational and cognitive, communicative and independent activities of the future specialist.

The following didactic principles are considered to be a prerequisite for the successful organization of the blended learning process in higher education institutions:

- perception of cognitive activity, that is, knowledge is acquired by students in the learning process with an awareness of their necessity and importance in their future professional activities;

- consistency and sequence, that is, blended learning is a holistic, logical and consistently organized process that has an ultimate goal and means of assessing the success of the students in each stage of the educational process;

- activity and independence, providing active independent cognitive activity of students;

- visualization, that is, the presence of various types of visualization in electronic and printed versions for ease access for students;

- individualization of the educational process, targeting each concrete student and taking into account individual characteristics. Blended form of education provides students with the opportunity to set the pace of work with educational mate-

rial independently, choose auxiliary teaching aids and means of intermediate control, etc.;

- motivation and positive attitude towards learning;
- interactivity to provide effective communicative interaction of all participants in the educational process (teachers with students, students among themselves) using traditional and computerized, mobile communication tools;
- flexibility of the educational process provides its adaptability to the cognitive or physical abilities of students in order to disclose and develop their cognitive, psycho-emotional, motivational and other abilities;
- the relevance of learning technologies involves the use of modern content of educational material, effective methods and ways of learning through traditional and computerized means of communication.

The goals and tasks set before the pedagogical staff required considerable preparatory work both in creating the training course and in training teachers and students themselves to use a new form of training and computer technologies in the learning process. The training methodological complex (TMC) for this model of learning assumed two subtypes: direct educational materials and a computer support system based on modern ICT. The creation of TMC in a blended learning system makes the teacher understand clearly the objectives and ultimate goals of the course, structure the material, choose the optimal forms of work and tasks, distribute the stages of the learning process into full-time and distance forms, and competently organize the control of students' work. Teachers have great responsibility in the areas of ICT skills training, including the development and testing of the training course itself. In connection with the decrease in F2F interaction between students and the teacher within the blended model of learning, a number of requirements were defined for the content and organization of the TMC:

- ease of electronic access to teaching materials for students;
- clear planning of the whole training process, indicating intermediate and final learning objectives;
- understandable structuring of teaching materials, both basic and additional;
- routing – the ability to see the path to the goal helps to focus on the result;
- a variety of work forms and material feed;
- adaptability, that is, providing students with materials of different complexity levels in accordance with their language competence; at the moment this approach is not used everywhere, but it is possible to develop it;
- instant feedback, which motivates, teaches and allows you to adjust learning, while there is interest;
- support of online communication with the teacher (and with other students) throughout the whole training course;
- monitoring and evaluation of all the main stages of students' activities by the teacher.

To solve the set tasks, the following research methods were used:

- the study and analysis of psychological, educational, scientific and methodological and special literature, including periodicals devoted to issues of distance learning and the use of information and communication technologies in the educational process;
- generalization and analysis of pedagogical experience;
- study of various information and communication technologies;
- pedagogical experiment on the implementation of the training course in the form of blended learning.

The main training methods for the blended model were:

- method of questioning;
- methods of interactive interaction of participants in the learning process;
- communicative methods;
- methods of cooperative learning.

**Results.** The experimental study was carried out in two stages. At the first stage, the teaching staff was directly acquainted with the fundamentals and peculiarities of the introduction of a blended system of teaching foreign languages. The analysis of psycho-pedagogical and scientific-methodical literature was conducted; the domestic and foreign experience of using blended teaching in higher education institutions was studied. Goals and objectives were defined, and a methodology for their implementation, methodological and didactic resources was developed.

An important issue of successful implementation of the blended learning system was the issue of the psychological and emotional awareness of the teaching staff for the active use of ICT. If institutions are serious about enhancing student education, then they need to ensure that academics are given the time and space to learn how to use new technologies and to experiment with blended learning [16, 17].

Increasing the computer literacy of both teachers and students, the formation of stable computer interaction skills are the keys to the success of learning activities in the blended learning system. Throughout the whole experiment, in the form of interviews and questionnaires, we monitored the level of working with computer and online technologies skills among teachers, and their relation to the very process of blended teaching of a foreign language. Figs. 1–3 show the level of teachers' awareness to implement BL and to use ICT at foreign language classes.

A similar survey was conducted among students throughout the academic year.

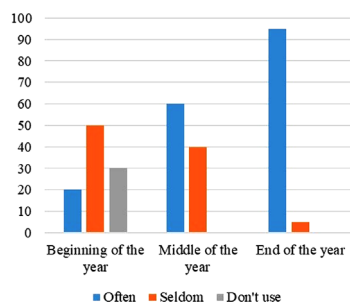


Fig. 1. Frequency of using ICT in foreign language classes

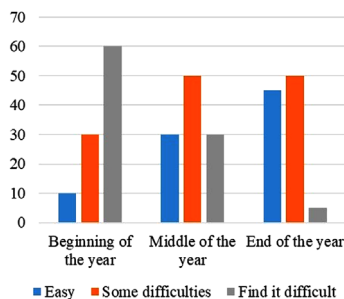


Fig. 2. Ease of using ICT in the learning process

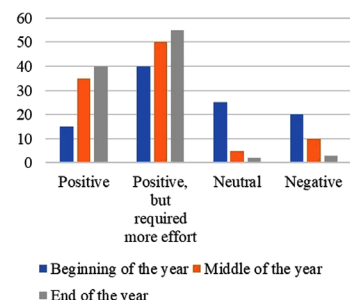


Fig. 3. Attitude to the introduction of BL in the learning process

Figs. 4–5 show the level of students' knowledge of computer technology and the willingness to use a mixed system of education.

The effectiveness of using the model of blended learning is caused by the correct and rational distribution of all types of educational activities: full-time, distance and independent work of students. The blended English language training program developed by us included full-time practical training/counseling/control activities, work with resources of UO Moodle and independent work of students with alternative sources for the preparation of individual or group assignments. Most of the F2F lessons were conducted at the beginning of the academic year, when students were introduced to the forms of work in the BL system.

The introductory course, conducted by us, included all F2F forms of work, including classes using online technologies in the computer classrooms of the Academy with the direct participation of the system administrator or e-moderators of the course. It should be mentioned, that the role of e-moderators in the process of blended learning is quite important. They take well-designed and crafted learning materials and facilitate a variety of interactive and collaborative learning activities. Traditional academics will regard e-moderators through a competitive lens and see them as second-rate academics, but students will view them through a pragmatic lens, based on how much assistance the e-moderator provides in the learning process (Salmon, G., 2000).

The initial part of the learning process, conducted in the mode F2F, is aimed to practice all kinds of work and interaction, to identify and overcome the emerging difficulties. Gradually, the number of F2F forms of education was reduced and by the end of the year it included face-to-face or video consultations through Skype, control activities and collective forms of work, for example, video conferences. Conducting video consultations or conferences is considered by us as F2F training. The teacher and students are in the same temporal and visual space, there is a direct contact between the participants of communication.

Fig. 6 shows the distribution of learning activity types in the mixed system of teaching English to students specializing in "Computer technology".

The online platform MOODLE was chosen as the basis for the distance component of the training course. This platform

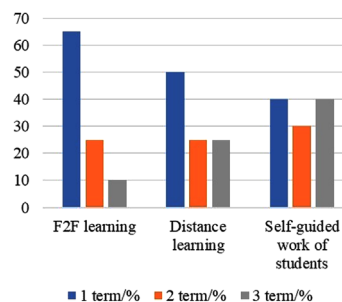


Fig. 6. Types of training activities

has a hypertext structure and includes content, information, communication components, including evaluation modules. These systems can work in real time. They are characterized by a high level of interactivity, contain a huge number of individual and group tasks. This platform allows you to create and store electronic learning materials and set the sequence of their learning. In addition, the electronic format allows you to use not only textual material, but also interactive resources of any format. Among the actively used resources of MOODLE are Lesson/Lecture (presentation of the content of each module), Assignment (tasks for students), Journal (area for checking students' works and tests, their correction), Glossary (a vocabulary of terms and specialized words), Test (tests for students) and Forum (area for sharing information).

One of the main components of a successful blended learning process is the constant and effective monitoring of students' learning activities (tutoring). Constant feedback from the teacher maintains the atmosphere of the relevance of the learning process, disciplines students, and allows identifying the difficulties and problems that trainees face, in time. And this will prevent a backlog of the program. In our pilot course, communication with students was supported with the help of online technologies (Skype, e-mail), resources of Moodle and mobile communication. The used set of communication tools made it possible to use both synchronous and asynchronous communication, depending on the needs and conditions of the learning process. It should be noted that synchronous communication was more actively used at the initial stage of the training course, when getting acquainted with the system of blended learning. In the second and third semesters, the synchronous communication was gradually replaced with the asynchronous link, and was mainly involved in conducting control or collective events (exams, presentations and their discussion, conferences, and others).

Pilot implementation of a new learning model requires constant monitoring of effectiveness of the learning process. In our case, the control was carried out throughout the academic year, starting with a preschool assessment and ending with the final exam. At the same time, a qualitative comparison of the obtained results with the results of the full-time students' training was conducted. The program of the blended English professional training course fully complied with the program approved by the Ministry of Education of Ukraine.

Initial testing of the language competence revealed the low level of listening and speaking skills for all students.

Later monitoring was conducted after the 1<sup>st</sup> and 2<sup>nd</sup> trimesters, and at the end of the academic year. Control at the end of the 1<sup>st</sup> and 2<sup>nd</sup> trimesters included listening, lexicogrammatical test and oral report on one of the studied professional topics followed by a discussion. At the end of the academic year, the oral report was replaced by the problem task, for which the student had to accumulate professional knowledge, express the vision of the problem in English and demonstrate the skills of successful communication in a foreign professional community, for example, to write down the list of computer terms and without referring to the book, describe

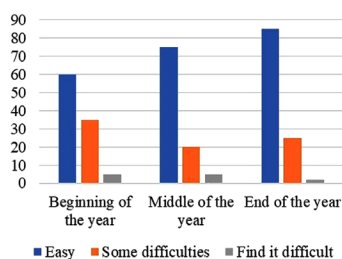


Fig. 4. Students' ease of using ICT in the learning process

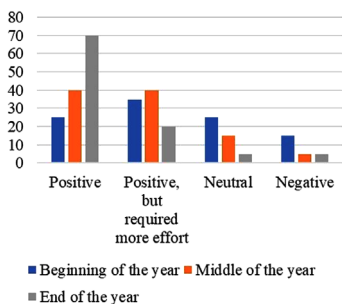


Fig. 5. Students' attitude towards a mixed system of education (BL)

the diagrams; read the statements and decide which you agree with more and why, and so on.

Figs. 7, 8 show the learning outcomes at the end of the 1<sup>st</sup> semester and at the end of the academic year.

The outcomes of the 3<sup>rd</sup> trimester demonstrated the positive dynamics of the blended learning process.

**Analysis of the experimental results.** Our experiment has shown that an important stage in the preparation and organization of the blended learning process is introducing teachers to the fundamentals of working with educational computer programs, online platforms and Internet resources and training them. Consequently, teachers' acceptance and use of ICT greatly influences both learners' approval of online learning, as well as their perceptions of how useful online tools are. Teachers at the initial stage had some difficulties in the development of ICT. Among the reasons we can single out novelty and unfamiliarity of forms of work, modest computer literacy (mainly use of computer technologies to search for information), age and psychological features. In general, the development of the online components of the course took more time for the senior teachers.

The professional English language course on the subject "Computer Technologies" developed by us has a modular structure and consists of 4 modules: "Modern computers", "Programming paradigm", "Computer security", "Modern computer technologies". The main units of educational content are thematic texts; for example, the module "Computer security" consists of the subtopics: "Computer viruses", "Hackers", "Computer crimes" and "Computer vaccines". Each text is accompanied by a set of tasks aimed at understanding lexical and grammatical material, including tests for self-monitoring and intermediate control.

The MOODLE platform is equipped with various types of tests: for a time, with given variants of answers, with the need to formulate an answer by your own, and others. For the basis of our course, tests were selected with given answers to choose for a certain amount of time. The number of attempts to pass the

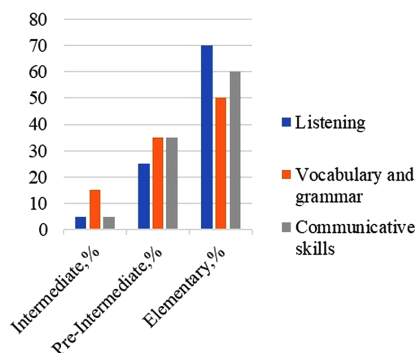


Fig. 7. Components of the language competencies before BL introduction

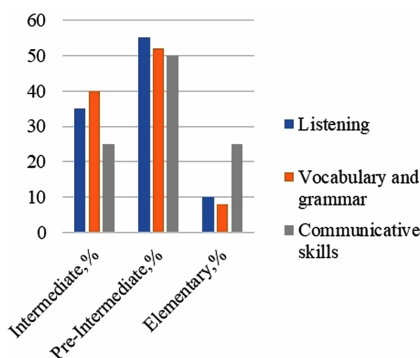


Fig. 8. Components of the language competencies at the end of the academic year

test is not limited, but the frequency of approaches is recorded by the tools of the platform and is visible to the teacher, which ultimately affects the final evaluation of the student's work. All thematic blocks are equipped with an additional text, audio, video materials placed in the depository of the training platform and in the teacher's blog. For example, when studying the topic "Artificial intelligence", students are offered video-lectures (no more than 5–7 minutes) by teachers from Massachusetts Institute of Technology (<https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-034-artificial-intelligence-fall-2010/lecture-videos/>). The topic "Robotics" is accompanied by additional articles from the scientific computer-based online journal "ADVANCED ROBOTICS", dedicated to the main modern developments in the field of computer forms.

The quality of the students' work over the main and additional materials, including the degree of mastering the material, is controlled by doing tests and creative individual tasks after each subtopic: presentation, essay, report, and so on. Completion of the final task implies mastering the basic lexical material on the topic, the ability to navigate in the information space and to find the necessary information on a certain topic, formulate and present it in a foreign language. The form of final control after each module is the collective work of groups of students to develop a project and defend it in an online or full-time conference format. The examples of projects are: Computers: friend or foe?; From mainframes to wearable computers; Computer health and safety; Operating systems and the GUI, and others.

The strategic basis in the model of blended learning, that we have created, is problematic, interactive and cooperative learning. Interactivity of teaching significantly expands the possibilities of educational and cognitive activity of students, increases their interest in the learning process, encourages learning motivation, and develops creative thinking. In the system of mixed learning, the concept of interactivity is expanded through the use of multimedia technologies that provide quick feedback not only to users between each other, but also between the user and content elements, i.e. information exchange between subjects and objects of virtual educational space ("student – educational information", "student – tutor", "student – student", "student – PC interface", "student – Internet", etc.). The educational shell of the Moodle provides a variety of tools for conversational interaction: chat, forum, web-cabinet, blog, personal page, and so on.

Among all types of conversational interaction between the teacher and students, students with each other, used by us, we can highlight presentations, team work on the project, a round table, online conferences, role-playing games. Each separate sub-topic of the module was accompanied both by individual tasks for mastering lexical and grammatical knowledge, and by individual creative tasks. For example, when studying the topic "Artificial Intelligence", students were asked to consider a number of questions for analysis and prepare a small report in writing on one of the topics ("Modern tendencies in robotics", "Artificial intelligence and content management", "Artificial intelligence in medicine", "AI as a base for space research", etc.).

At the end of the module "The Future of Computer Science", which includes the topic "AI", the F2F conference "Modern Trends in Computer Science: Reality and Prospects" was held. This planning of tasks and forms of work for students allows you to consolidate the basic knowledge, motivate independent work of students, to search for new information in a foreign language, thereby expanding and enriching their knowledge base and skills, and involving interaction with other students to solve a collective task. This, respectively, develops professional and communicative competence and mobilizes the creative potential of students. At the stage of preparation of the collective task, the teacher plays the role of an assistant, clearly tracing all the stages of the preparatory activ-

ity, but not actively interfering in the cooperation of trainees. This supervision helps the teacher to form primary assessments of the activities of each student.

Tutoring, as one of the main components of an effective model of blended learning, is carried out at all stages of the learning process. For its implementation, the resources of the Moodle platform were actively involved. It has a wide range of opportunities for managing and controlling the activity of students. In this platform, the activities of all participants, including both changing the content of their pages, and simply entering/leaving, are recorded. This allows the teacher to track the student's learning activity during the distance learning period. At the same time, it should be clarified that the quality of the tasks performed by students is revealed not by tracking their activity on the platform, but by the results of control activities (tests, collective projects, and others).

The platform also provides full awareness and openness for the student. On his desktop, all information about checking his/her work, comments of the teacher, his/her grades is displayed (in the MOODLE, the student's work is estimated in a percentage, and then converted into points), and analysis of his work in general. This information is available only to a specific student and teacher, which corresponds to the principle of confidentiality in the learning process. As for performing collective tasks, information is available to a wider range of students, which can be regulated by the tutor.

The success of tutoring is determined by the effective use and distribution of different types of communication (synchronous/asynchronous communication) in the learning process. The synchronous communication is an essential condition for the effective organization of the learning process with the blended model of training. The loss of regular direct interaction with the student, control of his/her academic performances can lead to a decrease in motivation, self-control, interest, and, in general, to a low level of mastering the material. F2F, synchronous communication was conducted, both in the classroom, and through chats, videoconferences, and Skype, mobile communications were also used to monitor timeliness of assignments.

Training in a real time mode, consultations with the tutor apart, was conducted in the forms of webinars with elements of group work, online conferences, and project defence. For example, when studying the topic "Basics of programming", the seminar "Types of programming and their relevance in the modern functional paradigm" was held, during which four groups of students (3–4 people) performed an online presentation of one of the programming types and proved its relevance in modern programming. At the end of the study of the module "Computer security" the online conference "Cybersecurity: ways to achieve" was held. The students presented individual reports, which were discussed by all participants of the conference online. Conducting online seminars and conferences significantly enlivens the distance learning process, but requires enough free time for students and teachers, as well as modern equipment and high-speed Internet.

Asynchronous communication also plays a significant role in the communicative process. The need to provide more flexibility to accommodate student diversity and a variety of study routines imposed by students' work-based and other commitments has led to a demand for asynchronicity in course design. Asynchronous online media is well documented as important for reflections and in supporting a more student-centred approach to study (Macdonald, 2008). Due to a number of objective reasons – students' employment, interruption of the Internet connection, low network capacity, possible failures in the equipment – the asynchronous communication replaced the synchronous communication, thereby supporting the continuous communication of the trainees and tutors, and trainees with each other. Among the frequently used communicative resources, it is possible to choose such resources of UO Moodle as forums, wikis, blogs, and e-mail. Topics for discus-

sion at the forums were offered not only by tutors, but also by students.

**Conclusions.** Thus, after the experiment, the following conclusions can be drawn. The learning process has ceased to be a routine for most students, but has been transformed into an interesting process of individual or collective search and assimilation of knowledge. Both teachers and students have been challenged by new roles. Teachers become guides and collaborators who support students and provide feedback. They challenge learners' thinking and design language learning tasks. The increase in the motivational component in the learning process was facilitated by the possibility of practical application of the acquired knowledge, namely, the demonstration of the ability to conduct professional conversation in the English language, to carry out a successful search for the necessary information in a foreign information space, draw up summaries, annotate articles, prepare presentations and reports.

Thus, the results obtained by us demonstrated the success of the introduction of the blended teaching system as a means of optimizing and improving the learning process in teaching foreign languages at the university. By the end of the academic year, most students were actively e-mailing and communicating online with students programmers from other countries, reading English-language scientific journals on computer technology and becoming members of professional online communities.

The expansion of the sphere of its implementation with the purpose of flexibility and individualization of the learning process in the current socio-economic conditions in the Donbas is becoming a topical problem.

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## Комп'ютерно-орієнтована модель змішаного навчання іноземної мови

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**Мета.** Аналіз досвіду впровадження моделі змішаного навчання у процес вивчення англійської мови студентами немовного ВНЗ з точки зору місця даної моделі в навчальному процесі, доречності її використання в сучасних умовах вищої освіти, визначення базових критеріїв і вимог до учасників навчального процесу задля забезпечення ефективної реалізації змішаного навчання, а також умов успішної організації й контролю навчання в рамках моделі змішаного навчання. Якісний і кількісний аналіз отриманих результатів.

**Методика.** Аналіз проводився в контексті сучасних методологічних концепцій і теорій: загальної теорії навчання, теорії й методології використання активних методів навчання, теорії й методології використання дистанційного навчання, методики використання інформаційно-комунікативних технологій (ІКТ) у навчальному процесі та ін. В основі дослідження лежать системний, компетентнісний та індивідуальний наукові підходи. У процесі вивчення досвіду впровадження моделі змішаного навчання в навчальний процес використовувалися наступні методи та прийоми: вивчення й порівняльний аналіз наявної теоретичної та практичної бази із досліджуваного питання, методи дедукції та індукції, систематизації, кількісного аналізу отриманих результатів, метод експертної оцінки, узагальнення.

**Результати.** За допомогою тестування встановлено початковий рівень володіння інтерактивними технологіями учасників змішаного навчання (студентів, виклада-

чів), на основі якого була спланована підготовчо-ознайомча частина навчального курсу. Проведено якісний і кількісний аналіз результатів навчання на початковому, проміжному й фінальному етапах, а також порівняльний аналіз із результатами студентів, що навчаються за стандартною системою (без он-лайн компонента). Виділені основні умови та критерії успішного використання системи змішаного навчання в умовах вищої освіти в нашій країні. Апробована навчальна платформа MOODLE, досліджена її зручність з точки зору синхронної та асинхронної комунікації, на практиці підтверджена її ефективність в умовах змішаної моделі навчання. На базі платформи розроблено навчально-методичний комплекс для викладання англійської мови студентам у рамках моделі змішаного навчання.

**Наукова новизна.** Обумовлена необхідністю модернізації та оптимізації освітньої системи України за рахунок упровадження нових програм, технологій і методик. Запит сучасного соціуму на підготовку конкурентоспроможних фахівців вимагає від системи освіти зміни парадигми й переорієнтації з простого викладу матеріалу на формування у майбутніх фахівців навичок і умінь користуватися та оперувати цими знаннями в сучасних умовах. Змішане навчання є актуальною моделлю, що дозволяє не тільки надати студенту певні знання, але й сформувати у нього вміння ефективно ними користуватися в різних комунікативних ситуаціях.

**Практична значимість.** Результати дослідження стануть у нагоді в подальших спробах упровадження змішаної моделі навчання у процес вивчення не тільки іноземних мов, але й інших академічних дисциплін, а також при організації самостійної роботи студентів, он-лайн комунікації, конференцій та інших видів навчальної діяльності.

**Ключові слова:** змішане навчання, освітня система, іноземна мова, інформаційні технології

## Компьютерно-ориентированная модель смешанного обучения иностранному языку

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**Цель.** Анализ опыта внедрения модели смешанного обучения в процесс изучения английского языка студентами неязыкового ВУЗа с точки зрения места данной модели в учебном процессе, уместности ее использования в современных условиях высшего образования, определения базовых критериев и требований к участникам учебного процесса для обеспечения эффективной реализации смешанного обучения, а также условий успешной организации и контроля обучения в рамках модели смешанного обучения. Качественный и количественный анализ полученных результатов.

**Методика.** Анализ проводился в контексте современных методологических концепций и теорий: общей теории обучения, теории и методологии использования активных методов обучения, теории и методологии использования дистанционного обучения, методики использования информационно-коммуникативных технологий (ИКТ) в учебном процессе и др. В основе исследо-

вания лежат системный, компетентностный и индивидуальный научные подходы. В ходе изучения опыта внедрения модели смешанного обучения в учебный процесс использовались следующие методы и приемы: изучение и сравнительный анализ имеющейся теоретической и практической базы по изучаемому вопросу, методы дедукции и индукции, систематизации, количественного анализа полученных результатов, метод экспертной оценки, обобщения.

**Результаты.** С помощью тестирования установлен начальный уровень владения интерактивными технологиями участников смешанного обучения (студентов, преподавателей), на основе которого была спланирована подготовительно-ознакомительная часть учебного курса. Проведен качественный и количественный анализ результатов обучения на начальном, промежуточном и финальном этапах, а также сравнительный анализ с результатами студентов, обучающихся по стандартной системе (без он-лайн компонента). Выделены основные условия и критерии успешного использования системы смешанного обучения в условиях высшего образования в нашей стране. Апробирована учебная платформа MOODLE, исследовано ее удобство с точки зрения синхронной и асинхронной коммуникации, на практике подтверждена ее эффективность в условиях смешанной модели обучения. На базе платформы разработан учебно-методический комплекс для преподавания англий-

ского языка студентам в рамках модели смешанного обучения.

**Научная новизна.** Обусловлена необходимостью модернизации и оптимизации образовательной системы Украины за счет внедрения новых программ, технологий и методик. Запрос современного социума на подготовку конкурентоспособных специалистов требует от системы образования смены парадигмы и переориентации с простого изложения материала на формирование у будущих специалистов навыков и умений пользоваться и оперировать этими знаниями в современных условиях. Смешанное обучение является актуальной моделью, которая позволяет не только дать студенту определенные знания, но и сформировать у него умение эффективно ими пользоваться в разных коммуникативных ситуациях.

**Практическая значимость.** Результаты исследования будут полезны в последующем опыте внедрения смешанной модели обучения в процесс изучения не только иностранных языков, но и других академических дисциплин, а также при организации самостоятельной работы студентов, онлайн коммуникации, конференций и других видов учебной деятельности.

**Ключевые слова:** смешанное обучение, образовательная система, иностранный язык, информационные технологии

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