

ПЕДАГОГІЧНІ НАУКИ

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Kovalenko OlhaNational Technical University of Ukraine
“Igor Sikorsky Kyiv Polytechnic Institute”**Konoplianyk Lesia**

National Aviation University

IMPLEMENTING BLENDED LEARNING AT TECHNICAL UNIVERSITY: ADVANTAGES AND CHALLENGES

Summary. The article is devoted to the problem of the blended learning implementation in the process of foreign language teaching at a technical university. It is focused on the purposes of blended learning and its benefits as well as the challenges, you can face while implementing a blended learning approach. Implementing of blended learning as innovation leads to a number of changes in self-determination and the ways in which the student and teacher work. Students acquire the space of freedom and responsibility in which they learn to make an informed choice and to be responsible for its consequences. Teachers begin to function in new roles for themselves, in particular, they move away from the role of the translator to the role of the tutor. The research examines the opportunities of this educational technology to narrow the gap in students' level of proficiency in a foreign language through an individual approach to learning, which corresponds to the main trend of the development of the modern educational system.

Keywords: blended learning, higher educational institution, technical university, traditional learning, online learning, self-study.

Коваленко О.О.Національний технічний університет України
«Київський політехнічний інститут імені Ігора Сікорського»**Конопляник Л.М.**

Національний авіаційний університет

ВПРОВАДЖЕННЯ ЗМІШАНОГО НАВЧАННЯ В ТЕХНІЧНОМУ УНІВЕРСИТЕТІ: ПЕРЕВАГИ ТА ТРУДНОЩІ

Анотація. Стаття присвячена проблемі впровадження змішаного навчання в процесі викладання іноземної мови в технічному університеті. В ній визначаються цілі змішаного навчання та його переваги, а також труднощі, з якими можна зіткнутися при впровадженні змішаного підходу до навчання. Впровадження змішаного навчання як інновації призводить до низки змін у самовизначенні та способів роботи студента та викладача. Студенти набувають більше свободи і відповідальності, завдяки чому вони навчаються робити усвідомлений вибір і нести відповідальність за його наслідки. Викладачі починають функціонувати в нових ролях для себе, зокрема, вони відходять від ролі викладача до ролі координатора (помічника), а основним інструментом педагога є середовище навчання, в якому межі між навчальною аудиторією та онлайн-середовищем стираються. Таким чином, змішане навчання безсумнівно є прогресивною освітньою технологією з широкими перспективами щодо використання та подальшого розвитку. Завдяки змішаному навчанню у студентів виробляються такі особисті якості, як здатність вирішувати складні проблеми, критичне мислення, можливість вибору надійних джерел даних і вибір інформація, яка дійсно потрібна для вирішення проблеми, творчості, здатності аналізувати існуючу інформацію, синтезувати нові ідеї та рішення, працювати в команді, здатність продуктивно взаємодіяти з іншими людьми, шукати однодумців і створювати команди, вміння прийняти рішення і брати на себе відповідальність. Необхідність таких технологій пов'язана з тим, що система вищої освіти спрямована на підвищення часу самостійної роботи студентів і скорочення кількості навчальних годин для вивчення дисциплін. Це призводить до збільшення обсягу навчального матеріалу для самостійного вивчення і вимагає використання ІКТ у навчальному процесі, а також зумовлює той факт, що традиційних форм навчання недостатньо для вирішення цих завдань. Дослідження показало, що впровадження змішаного навчання в навчальний процес технічних університетів сприяло покращенню результатів навчання студентів технічного університету.

Ключові слова: змішане навчання, вищий навчальний заклад, технічний університет, традиційне навчання, онлайн навчання, самоосвіта.

Formulation of the problem. Foreign language teachers of higher educational institutions face a number of problems that require immediate solution. Firstly, the reduction of classroom hours leads to the fact that it becomes almost impossible to teach students the necessary skills of mastering a foreign language using only tradi-

tional teaching methods. Secondly, many students come to universities with a low level of proficiency in a foreign language, which requires additional work with them. Thirdly, the main trend in the development of a modern educational system is the orientation towards the realizing of the high didactic potential of computer and telecommunication

technologies. It implies the mandatory use of information educational technologies in the educational process. Today there is a strong interest in using modern information and communication technologies (ICTs) in the education. This is due to the rapid development of information technology, which has become an integral part of a modern human life. Improving the educational process at the university through ICT is a relevant problem of higher education, which aims at introducing effective methods of training highly skilled professionals who have theoretical knowledge and know how to work with information, have practical skills to solve problems in the professional field, are able to make independent, well-founded decisions and can be competitive on the international labor market. In addition, today there is a problem of rapid knowledge “obsolescence” and the need to process a large amount of information. Therefore, the problem of training specialists with the necessary knowledge and skills to continue lifelong learning is becoming urgent.

Computerization in education, in particular at higher school, leads to the emergence of new methods and technologies for organizing the educational process that develop the competencies necessary for a modern specialist [4, p. 468]. Paying considerable attention to the quality of the training of specialists, scholars investigate pedagogical technologies that could ensure the implementation of the didactic principles of differentiation and individualization of education, would contribute to the development of cognitive activity, creativity and consciousness of students, as well as the transition from education to self-education. Higher educational institutions, government and military educational institutions of European countries and the USA are actively implementing the latest pedagogical technologies (distance learning, e-learning, mobile learning, blended learning and others [1, p. 117]). The following factors, as availability of high-speed Internet, high level of computer literacy of both students and teachers, as well as technical equipment of universities audience are actively contributing to this process.

Despite the fact that these factors are still at insufficient level in Ukraine in comparison with the above-mentioned countries, these pedagogical technologies are also being implemented in the educational process of the higher educational institutions. Moreover, the need to such technologies is due to the fact that the higher education system is aimed at increasing the hours of students' self-study and reducing the number of classroom hours for studying academic disciplines. It results in increasing the amount of teaching material for self-study and requires the use of ICT in the learning process. And it predetermines the fact that traditional forms of learning are not enough to solve these tasks. In addition, the use of exclusively traditional forms of teaching often leads to students' passivity, since such forms do not cause sufficient interest in displaying students' opportunities and do not sufficiently activate their desire to acquire knowledge on their own. Online, distance and mobile learning are gradually becoming traditional for higher education, but each of them has its own limitations. These constraints have led to attempts to join different methods of knowledge transfer [7] and to the emergence of a new form of learning called blended

learning that involves the optimal combination of traditional technologies with innovative electronic, distance and mobile learning technologies.

Analysis of recent research and publications. Numerous publications of Ukrainian and foreign scholars studying blended learning recognize it as one of the new directions for improving the educational process, the quality of future specialists training and the effectiveness of the system of continuous education.

The problem of the use of blended learning in the educational system has been investigated by the following foreign scholars: D. Bern, K. Bonk, C. Graham, B. Collins, R. Larsen, D. Nagel, E. Rossett, D. Harrison, J. Hoffman, K. Henry, C. Reed and others. C. Bonk and C. Graham point out that the popularity of blended learning, combining direct learning in the classroom and online learning, is growing rapidly [7]. However, according to foreign scientists, today there are still many problems that need to be solved when introducing this approach of learning. First of all, there are many technologies and knowledge transfer methods that can be used for blended learning, but little is known about the effectiveness of such mixing [11]. Secondly, there are many different models of blended learning and approaches to learning that lead to confusion in finding optimal approaches to blended learning and ways to evaluate blended courses or programs. Taking into account the abovementioned facts, educators need guidance on what optimal “blending” can be used in educational activities.

Ukrainian researchers K. Buhachuk, L. Dankevych, H. Dziman, O. Korotun, O. Kuzmenko, V. Kukhareenko, N. Oliinyk, I. Puchkov, O. Rafalska have also been investigating this topic, and O. Rohulska, Y. Smirnova-Trybulska, Ya. Sikora, O. Spirin, Yu. Trius, H. Tkachuk, L. Fandeeva, H. Cherednichenko, O. Chuhai have conducted theoretical and experimental studies on implementing blended learning for future specialists' training.

Identification of previously unsettled parts of the general problem. Although the investigations of the above-mentioned scholars are sufficiently substantiated in describing the structure and organization of blended learning of individual disciplines or the implementation of blended learning for training specialists of a certain profile, this problem remains a relevant and controversial one today. One of the main problems in the development of blended learning models is the rigidity of the training forms, the domination of a narrow subject matter in the development of curricula, the predominance of the principles of planning activities from top to bottom, and, of course, the formats and content of existing reporting. Teacher should not break apart: aware of the need for change, they, at the same time, are forced to fulfill the plan, and in this sense they remain “hostage” of the existing educational system. It is advisable to identify the benefits of traditional, electronic, distance, and mobile learning to be used when introducing blended learning in the educational process of universities, point out the challenges for its implementations today and to propose their solutions as well as to develop teaching and methodological support, etc.

The purpose of the study. The purpose of our research is to analyze the implementation of blended

learning in the educational process of a technical university and its main tasks, highlight the benefits and difficulties of its use, and to determine the prospects for its use in the practice of technical universities.

Main part. The term “blended learning” came into the modern educational paradigm of American pedagogy and became widely used in the teaching method after the publication of Bonk and Graham’s book “A Handbook of Blended Learning” [3, p. 261]. Since then there has been debates about the meaning of this term, both among foreign and Ukrainian researchers.

M. Oliver and K. Trigwell generalize the concept of blended learning as:

a) blending web-based technology to achieve the educational objective;

b) combining learning theories (e.g., constructivism, behaviourism, cognitivism, and connectivism) to produce an optimal learning outcome with or without instructional technology;

c) mixing any form of teaching technology with face-to-face instruction-led training in the classroom [10].

On H. Singh’s opinion, such type of learning comprises different event-based activities including face-to-face learning in the classroom, live e-learning and self-pace learning. Blended learning encourages students to learn in a collaborative and interactive manner at their own pace and in the convenient time for them [12].

According to most Ukrainian scholars, blended learning is a process of obtaining knowledge, skills and abilities, which is accompanied by a combination of different learning technologies: traditional learning, e-learning, distance learning, mobile learning, etc. (Yu. Trius, A. Striuk, V. Kukharenko, O. Korotun, H. Tkachuk).

H. Tkachuk defines blended learning as a purposeful process of transferring and assimilating knowledge, skills, and methods of students’ cognitive activity on the basis of the combination of technologies of traditional, electronic, distance and mobile learning [7, p. 246].

V. Kukharenko generalizes blended learning as 1) a form in which students study in the classroom and perform asynchronous online activities (combining elements of traditional and online courses) (*in the narrow sense*); 2) a form of learning, which sets out the framework for an online course that uses synchronous meetings and network technologies with asynchronous activity and possible face-to-face meetings (*in a broader sense*); 3) the interaction of online students located in different places [2, p. 49].

O. Korotun interprets “blended learning” as a purposeful process of interaction between subjects of learning based on a combination of traditional and online teaching patterns that take place both in and out of the classroom, in synchronous and asynchronous mode and is based on the widespread use of ICT [1, p. 118].

Despite the different formulations of blended learning, its essence is that it is a rational combination of the traditional classroom system and modern digital education, which allows taking their advantage and minimizing their drawbacks. The common point is the use of online technologies that enhance the efficiency of the educational process at technical universities, and contribute to the fact that the teaching material becomes dynamic

and understandable for students of different educational styles, satisfying their individual needs.

According to O. Chuhai, the use of blended learning enables to uncover the potential of each student according to their individual needs and opportunities [5]. During this model of training, the student gets knowledge both independently (online) and through work with a teacher (full-time form). This training allows controlling time, place, rate and method of material studying.

Among the main forms, methods and means of blended learning that are borrowed from traditional teaching, are lectures and practical classes, seminars, tests, reports, teaching materials (textbooks, tutorials, visual materials, handouts). Forms and methods borrowed from distance and e-learning include audio and video collections, electronic textbooks in the form of cloud appendix, educational literature on e-libraries, online communication and chat using, forums, e-mail, Skype, online projects (individual and group ones), project method using the Internet, virtual learning, animation and simulation, etc.

Blending can be at the level of activity when the training activities contain traditional and multimedia elements of the course; at the program level, which embodies a mix of traditional and distance courses; at the level of the course, covering the combination of traditional and distant events; and at the institutional level, where traditional classes can be used at the beginning and the end of the semester with distance learning between them or other more complex forms [7].

There are different ways to implement blended learning into the educational process of universities but we would like to represent the two ways which we use while working with students of the National Aviation University and National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute”. One of them is to use ‘flipped classroom model’ of blended learning with e-lectures on grammar and lexical topics which students study at home with their further discussion in the classroom. Such model permits to save enough time, which is very crucial nowadays when the hours devoted to the classroom work are reducing. Another way is to combine traditional face-to-face classroom learning with individual work of each student with online courses on various platforms. But even these two models of blended learning have assisted in increasing the efficiency of practical training in ESP due to the work with electronic resources of the online course. By using various tools (chats, forums, skype), online communication provides the students in different places with the ability to communicate and work together, as well as gives them a certain amount of freedom in the learning process.

Considering the blended learning, it is important to analyze the main advantages and disadvantages associated with the use of this form of learning at a technical university in order to examine its efficiency. We distinguish the following advantages:

- openness of the educational process;
- flexibility of learning;
- frequency and accessibility (permanent access to educational materials at a convenient time regardless of geographical location);
- modularity (planning of an individual training trajectory);

- self-development and self-study (students acquire new knowledge through electronic resources, and that stimulates the development of responsible attitude towards learning);

- realization of the personalized approach (taking into account the individual characteristics of students; possibility for students to choose the pace and volume that are convenient for them);

- increase of the motivation of students' cognitive activity, the emergence of a sense of success;

- increasing the effectiveness of teaching activities in order to achieve new educational outcomes;

- technological nature (use of new IT achievements);

- interactivity (the ability of students' interaction with the learning environment);

- increasing computer literacy of both students and teachers;

- use of authentic educational materials;

- coverage of a large number of participants in training;

- the opportunity to monitor the student's learning process and, if necessary, to adjust the educational process;

- changing the role of the teacher from the translator to the coordinator, whose task is to organize the joint activity of students and encourage them to become independent;

- a significant reduction in the costs of organizing the educational process and saving material resources.

Thus, the research has shown that implementation of blended learning into the educational process of technical universities has contributed to students' improved learning outcomes including higher grades for ESP course, more profound knowledge of the course and better understanding of course concepts.

However, today the universities still face some challenges with the implementation of blended learning in their education process. They include the following ones:

- Blended learning depends on the technical means and how the classroom is equipped which can be lacking at Ukrainian universities. One of the reasons is, on E.T. Akpan opinion, the insufficient interaction between the ICT experts and the teaching staff implementing blended learning. He proposes such solution: to ensure a efficient blended learning for students, the university should provide the support for course redesign, which involves choosing the course objectives that can be achieved best of all through online learning activities, and the parts of the course that can be better accomplished in the classroom, and how to integrate these two learning environments [7]. Moreover,

implementing blended learning may have difficulty with more sophisticated technologies. For instance, slow Internet connection the students have at home may influence their ability to be engaged into online discussions, which results in their frustration and negative impact on learning.

- In addition, some students occasionally review lectures due to the lack of self-organization, which may lead to their lag.

- Computer illiteracy of both students and teachers can also prevent the effective use of blended learning.

- Among organizational issues, the need to overcome the reluctance of teachers to use blended learning through low motivation to learn new methods for working with students and the need for careful planning of such lessons, identifying at what stages the cooperation is required, and what work should be done in the network or in the classroom; overcome the belief that blended learning is not as effective as traditional classroom education. These issues can be partially solved by improving the teachers' skills for e-learning. Other difficulties include inefficient student time management and the lack of self-discipline, the difficulties that may arise when using the e-learning platform, and the low quality of the training material.

Conclusions. The development of the information environment of a modern society requires the transfer of a part of the educational process from the classroom to the Internet space. Therefore, the introduction of blended learning can become an important area of modernization of modern higher education. Taking into account the benefits of blended learning listed in the article, we conclude that the use of this innovative form of education in the educational process of the university as a whole and in the study of English in particular. The use of blended learning in the learning process at technical universities helps to improve the efficiency of the learning process, as it allows to solve a number of tasks that are important not only for teachers, but also for students. First of all, when classroom hours are reduced, blended learning provides an opportunity to devote as much time to learning a foreign language as it seems appropriate in each case. Secondly, it makes possible to narrow the gap in the level of proficiency in foreign language between students through an individual approach to learning. Thirdly, it corresponds to the main trend of the development of the modern educational system through the use of information educational technologies in the educational process. However, the implementation of this form still requires a lot of efforts from teachers.

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