



# From the Experience in Creating an Effective Model of Blended Learning

## De la experiencia en la creación de un modelo efectivo de aprendizaje combinado

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#### ABSTRACT:

The study concerns the quality of the educational process improvement by combining modern technologies with traditional forms of education. Is it worthwhile to introduce the blended learning technology into the learning process and what conditions should be created for this? The article describes the experience of the work on creating the most effective model of blended learning that contributes to improving the quality of education of undergraduate students of vocational education on the example of the basic discipline "Life Safety". The conclusion is made that blended learning contributes to improving the quality of education and developing professional competencies among students.

**Keywords:** classroom work; e-learning course; "flipped class" training model; higher education; student training.

#### RESUMEN:

El estudio se refiere a la calidad de la mejora del proceso educativo combinando las tecnologías modernas con las formas tradicionales de educación. ¿Vale la pena introducir la tecnología de aprendizaje combinado en el proceso de aprendizaje y qué condiciones deberían crearse para esto? El artículo describe la experiencia del trabajo sobre la creación del modelo más efectivo de aprendizaje combinado que contribuye a mejorar la calidad de la educación de los estudiantes de pregrado de educación profesional sobre el ejemplo de la disciplina básica "Seguridad de la vida". Se llega a la conclusión de que el aprendizaje combinado contribuye a mejorar la calidad de la educación y al desarrollo de competencias profesionales entre los estudiantes.

**Palabras clave:** trabajo en el aula; curso de e-learning; modelo de entrenamiento "flipped class"; educación más alta; entrenamiento de estudiantes.

## 1. Introduction

Nowadays, the rapid development of information and computer technologies has opened up

wide possibilities for using different methods of education in the system of modern education. Over the past decade, the most relevant and widely sought-after form of teaching students in the system of higher education has become distance learning with the use of electronic training courses. In our country, as in other countries of the world, distance learning has gained immense popularity and has become widely used along with traditional forms of education. The main model for implementing distance learning and introducing new telecommunication technologies in the educational process of the university is blended learning, which involves the integration of traditional classroom training with a distance electronic course. As a rule, distance learning is realized on the electronic educational platform of the university through a distance learning system and is implemented using IT-technologies in online courses.

The modern state standard of higher education requires the choice of new educational strategies. It envisages the implementation of the competence approach and the formation of person's readiness to learn throughout all his/her life (Silakova 2014, p. 21). A blended form of learning became widespread as a result of the assimilation of classroom work with e-learning through distance e-learning courses (DLCs), by which we mean learning resources placed on an electronic educational platform. The DLC serves as a navigator in the information space, allows online training and self-education in various disciplines, as well as assessing the acquired knowledge and skills of trainees through various types of control.

Nowadays, distance learning is widely introduced into the educational process in many universities due to the reduction of classroom activities and the increase in the proportion of independent work of students. It has a number of advantages over traditional forms of education. M.B. Lebedeva notes (Lebedeva, Agaponov, Goryunova, Kostikov, Kostikova, Nikitina, Sokolova, Stepanenko, Fradkin, & Shilova, 2010, p. 336) that remote technologies using electronic means of communication are a means of organizing, maintaining and supporting independent work of students. According to V.Yu. Shurygin and L.A. Krasnova (2016), DLCs can become a means of forming the capacity for self-education because it suggests a large amount of independent work of the student and the possibility of independent formation of a certain system of knowledge, the development of such personality qualities as responsibility, independence, organization and the ability to really assess one's knowledge. In their opinion, the purposeful independent work of the trainee is the main advantage of e-learning. It contributes to the development of such personal qualities as responsibility, aspiration, independence, organization and the ability to really assess one's knowledge. All these qualities will further help the person to be fully realized in society, choose the right attitude and creatively approach the future profession. E.S. Belko believes (Belko, Bykova, Kuznetsova, Kytmanov, & Tikhomirov, 2016, pp. 107-112) that distance learning makes it possible to transform a student from a passive consumer of knowledge into an active creator who knows how to formulate a problem, to analyze the ways to solve it, and to arrive at an optimal result.

However, many teachers often refuse to develop and implement DLCs, considering direct interaction with students in face-to-face sessions more motivating and giving better results. However, D. Mollenkopf (Mollenkopf, Vu, Crow & Black, 2017) conducted a comparison of the effectiveness of the electronic course and the traditional form of training that did not reveal a significant difference in the results of the training of future specialists. It should be noted that one of the important conditions of this study was careful preparatory work, which consisted in developing a quality distance course and traditional training. Consequently, the result of learning is more dependent on the used educational technologies than on its form.

The point of view of students on the quality of teaching through DLCs is that the preference is also given to "live" communication. In particular, S. Sullivan notes (Sullivan, Polnick, Nickson, Maningeri, & Butler, 2013, p. 52) that students' assessment of the teaching of discipline in face-to-face interaction with the instructor proves to be higher than with online teaching. Students note a higher motivation to learn by direct contact with the teacher. Researchers point out the connection between the received teaching assessment and the factor of emotionality and the

higher importance of direct communication.

To date, the most promising direction of training is a blended model that combines traditional training with distance education. However, according to M.S. Bakharev and S.N. Nagaeva (2016), to improve the quality of the blended teaching process a thorough methodical training is required which will allow classroom activities and independent work with the electronic course to harmoniously interact with each other and create a unified educational space for the university.

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## 2. Methods

At Elabuga Institute of KFU, a program for the modernization of training courses with the involvement of distance learning technologies through the LMS MOODLE distance learning system has already been implemented for several years. This system provides an opportunity to manage the independent work of students (Kozyreva & Martemyanov 2015) and promotes the introduction of a model of blended learning in which the combination of distance education with its traditional forms occurs.

When introducing e-learning, we chose the basic discipline "Life Safety" which is taught in all programs of vocational training. The choice takes into account the specifics of the classroom work and the number of hours allocated for independent mastering of the content block of the discipline. According to the curriculum, 50% of the total student workload in the study of Life Safety is given to the independent work. Classroom training is equally represented by lectures and seminars. The presence of practical work, the lack of laboratory work and a large proportion of independent work in the training load have determined our choice to develop an online course in this discipline.

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## 3. Results and Discussion

The development and implementation of remote DLCs in the training of students in the discipline "Life Safety" was carried out by us in three stages.

The first stage. The introduction of remote DLCs in the educational process.

For this stage, the following is typical:

- 1) converting teachers' educational materials from paper into a digital format;
- 2) development of means for controlling reproductive knowledge designed for automated testing (tests);
- 3) the minimum number of problematic tasks involving the application of knowledge and aimed at direct examination and review by the teacher;
- 4) involving students in creating a collection of digital educational resources and evaluating the work (for example, abstracts) of each other;
- 5) an attempt to introduce tasks that involve discussion in groups, etc.

At the first stage there was some autonomy in the implementation of online courses and traditional (face-to-face) training. The DLC was mainly a translator of information in the form of various types of content (lecture notes, video materials, dictionaries, electronic textbooks) and performed the function of self-examination and control of students' knowledge. Classroom training was ahead of the independent work of students carried out online. Communications prevailed in the offline mode. There have not been any obvious changes in the quality of the students' training at the stage of the introduction of the DLC. The criterion for assessing quality was the level of the information and communication competence and motivation for self-education.

The information and communication competence is the integration of communications, the ability to work in a group, to perform social roles, the ability to work with information, to search and process it using IT technologies. Since at this stage students received information in

finished form, students did not interact in the online course, this competence could not be developed under these conditions. In the classroom, most students preferred to receive ready-made knowledge, experienced difficulties in self-interpretation of information with examples. The communicative competence, as the ability to communicate within the studied subject, was developed only in full-time practical exercises, when students were discussing problematic issues or reviewing each other's answers.

Thus, the direct transfer of traditional content into a remote form and the lack of tutoring accompanying the independent work of students turned out to be ineffective. To increase the effectiveness of blended education, it was necessary to introduce new approaches to the organization of educational material, online communication and management of the educational process.

The second stage. The synchronization of the full-time and distance learning module or the creation of a model of blended learning.

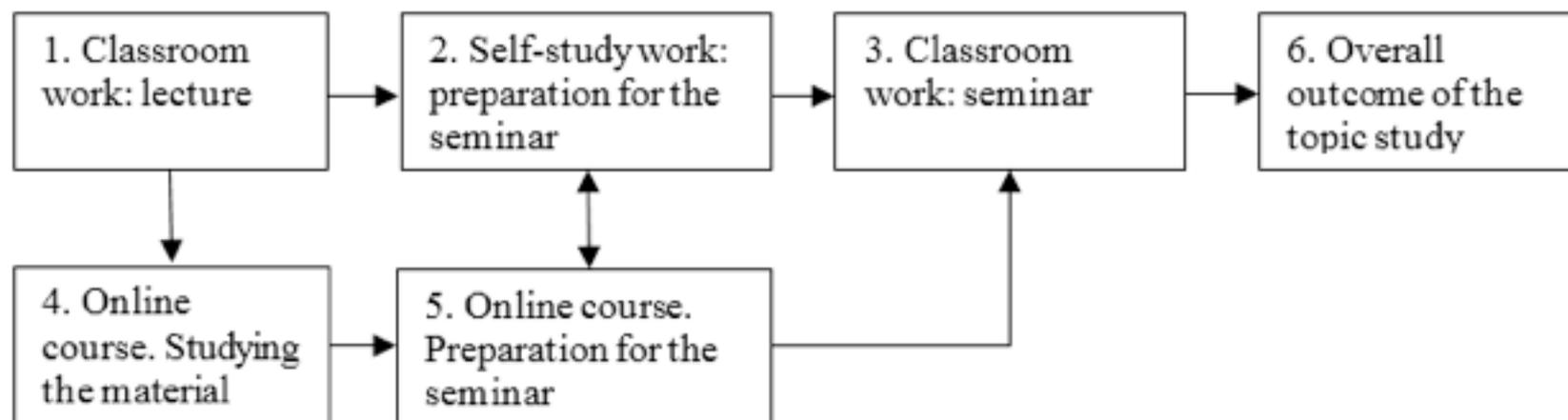
The attempts to integrate traditional and distance learning have led to the use of different learning models. Two elements of blended learning were subjected to modeling:

1. Correlation in time of online learning technologies and "face-to-face" learning;
2. Management of independent student learning activities.

In the first model (Figure 1), classroom sessions (1) had an advanced character, were used to develop new concepts, established a logical connection between the studied and newly mastered knowledge. The nature of the lectures had a low level of problems in connection with the insufficiently developed educational skills of students to solve problems and the limited nature of the lecture in time. The activity of the teacher prevailed. The activity of students was limited to perception, reproduction of knowledge.

**Figure 1**

Integration of students' classroom work with an online course. Model 1.



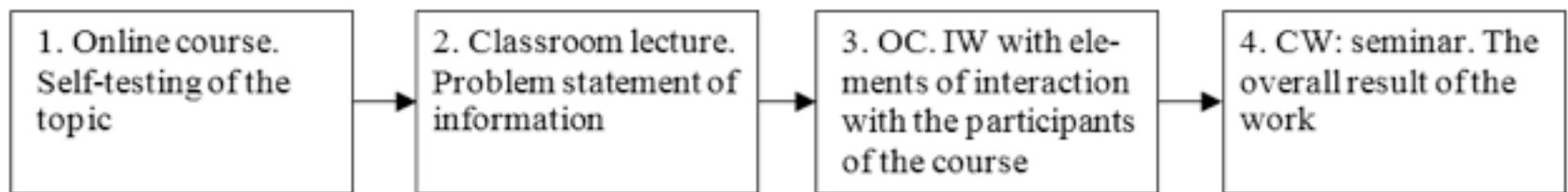
In the DLC (4) there was a change in lectures in an interactive format, offering a step-by-step study of the educational material with the subsequent verification of its assimilation. References to additional sources of information and assignments for their use contributed to the growth of independent work of students in the selection and transformation of information. The tasks for self-control in the direction of application of knowledge were changed. There were implemented tasks on the compilation of mental maps, the joint creation of resources: wiki, glossary. There was chatting, discussing some problem issues and exchanging views on the forum. After the independent work of students (2, 5) with the proposed information, the results of the seminar were fully discussed at the seminar (3). The evaluation of the results (6) was summarized from the assessment of the work in the online course and the evaluation of the work at the seminar which took into account the student's activity and the quality of his/her knowledge.

In the second model (Figure 2), students were asked to perform some tasks before the classroom training session, to carry out control assessment of knowledge on the newly studied topic in the online course (1) in order to identify typical problem points. In the classroom sessions (2), the emphasis was on examining the most difficult questions to understand with

the use of the technology of problem-developing education. Preliminary work in the online course has actualized the knowledge of the topic, created conditions for a faster and more qualitative discussion of the issues.

**Figure 2**

Integration of students' classroom work with the online course. Model 2



**OC – online course; IW – independent work; CW – classroom work.**

The subsequent work of students with the online course (3) was aimed at the formation of the information-communicative and professional pedagogical competences. For this purpose, tasks requiring joint discussion of issues, search and analysis of answers have been introduced in the DLC. The group work on the development of joint projects online (forum, Skype) developed the ability and readiness to use these technologies in further professional activities. There was an advisory help of the teacher in the online and offline modes.

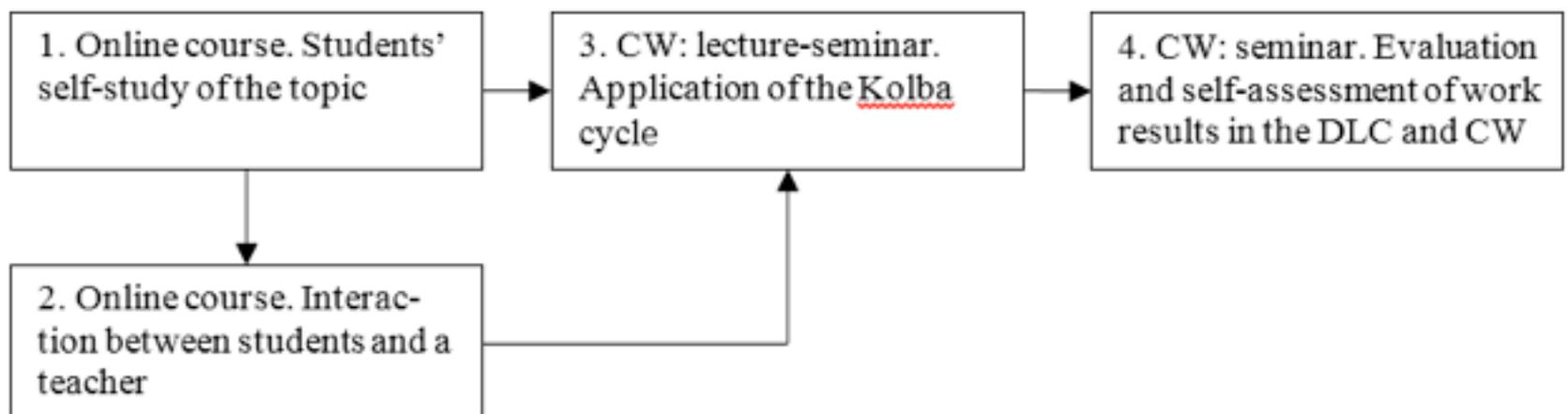
The final element of this model was full-time work at the seminar (4). After the preliminary discussion of the topic, group work in the DLC, as a result of the transformation of information into knowledge, students learned to freely express their thoughts on the topic under study.

When summarizing the results, one of the evaluation criteria was the level of the information and communication competence (independence in the search for information by means of ICT, criticality in its selection and the ability to apply the acquired knowledge; the ability to conduct a constructive dialogue, including by means of ICT; knowledge of social roles and the ability to implement it).

When using the third model of blended learning (Figure 3), the main role was assigned to the independent work of students in the development of the training module. Work with the online course (1, 2) preceded the full-time course of study. The students studied the interactive lecture in the DLC, got acquainted with additional materials, carried out self-control of knowledge of the topic, exchanged opinions and conducted joint selection of information for discussion in the classroom, forming essentially a lecture order for the teacher.

**Figure 3**

Integration of students' classroom work with an online course. Model 3



**CW – classroom work**

Classroom work has acquired an integrated lecture-seminar form. Lectures (3) allowed time for organizing problem-development training, solving practical problems with application and systematization of knowledge, moderation of group work on the development of educational projects using the Kolba cycle technology.

According to the Kolba cycle used by psychologists for adult education, the study of new teaching material begins with the identification of the subject of the conversation, and then the reflection on this experience and its understanding are organized. The next stage of the cycle involves adding new information and establishing links with the existing experience or knowledge, building a model of new knowledge that is involved in active experimentation at the last stage. When this approach is used, the boundaries between the lecture and the seminar are blurred, the motivation for self-education is intensified, and the learning activity is activated.

The third model of blended learning was the most effective for implementing the competence approach; it helped to achieve awareness of knowledge, increased the level of communication between students and students and the teacher. This result stimulated the mastery of the technology of the "flipped class" and its introduction into the educational process.

The third stage. The introduction of the "flipped class" technology.

Introducing the "flipped class" technology, which in the opinion of many authors (Bryksina, & Kalinkina, 2014; Frimannsdottir, 2014; Litvinova, 2015; Reyna & Meier 2016), is today the most promising model, we tried to find out whether the preliminary preparation of students for classroom activities (carried out in an online course) affects the results of academic achievement. Comparison of academic progress with the model of training showed that the maximum results of educational activity were shown by students who followed the recommendations of the teacher and performed online course tasks before the classroom session. This correlation was made possible by automatic fixation of dates and duration of users' work in the DLC reports.

In the course of the study of the problem of effective use of blended learning in the conditions of the university, the following results were obtained:

1. The average performance in the discipline "Life Safety" of students which adhered to the traditional training scheme (classroom + independent work in the online course), was 3.6 points (on the 5-point grading scale), and students who have previously studied the relevant material in the online course had 4.3 points. The general criteria for assessing the student's work in classroom sessions were the knowledge of lecture material, active participation in the discussion of the issues during each seminar, the independence of judgments, the fluent possession of educational material on a topic, the ability to discuss the problem in a group, to assume social roles and find creative solutions to problematic situations.
2. The work of students in the classroom was more productive after the independent study of the relevant topic in the electronic course. This manifested itself in the quantity and quality of the solution of the problem situations proposed by the teacher which required an operative solution.
3. It was also noted that the activity of students during the discussion in private seminars after preliminary work in the distance was much higher than for students using the traditional approach.

Now, the third stage of blended learning is still going on, and it is too early to draw final conclusions. But the preliminary analysis makes it possible to note that the organization of a blended model of training (full-time online course) can improve the effectiveness of educational activities and allow obtaining higher results of students' progress with the "flipped class" technology introduction.

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## **4. Conclusion**

The final conclusions on the effectiveness of using the "flipped class" technology in a blended model of preparing students for professional activities are too early to draw. A more thorough organization of the blended learning experiment is required with a parallel study of three study groups: a control group that studies the traditional online course, an experimental group 1 (the

"flipped class"), and an experimental group 2 (interactive tasks with the accompaniment of instruction through an organized interaction in the online mode). It is necessary to determine the criteria for evaluating the experimental results obtained and the factors that have the greatest impact on improving the quality of instruction. At first glance, the "flipped class" technology is a condition that improves the efficiency of preparing students for professional work in conditions of blended training, and reduces the risk of rejection of e-learning in connection with its seeming inefficiencies.

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