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Creating a continuous educational environment with blended learning models

Tamara V. Agapova

PhD in Culturology, Associate Professor,
Krasnoyarsk State Agrarian University,
660130, 90, Mira ave., Krasnoyarsk, Russian Federation;
e-mail: agapova-07@mail.ru

Larisa Yu. Aisner

PhD in Culturology, Associate Professor,
Krasnoyarsk State Agrarian University,
660130, 90, Mira ave., Krasnoyarsk, Russian Federation;
e-mail: larisa-ajsner@yandex.ru

Abstract

The development of modern society is characterized by the great influence of digital technologies, which penetrate into all spheres of human activity, including the educational sphere. Digital technologies have become a part of the holistic educational process, significantly increasing its effectiveness. The modern education system is aimed at entering the global information and educational space. Higher education institutions are constantly looking for ways to improve the quality of education and knowledge resources management, mastering new training formats (blended learning, educational coworking, WIKI, foresight laboratory, etc.) and introducing a large number of digital technologies. The article deals with a blended learning format: defining the concept, considering the features, the history of development and the positive and negative sides, identifying the most popular and effective models. The authors present the results of their research, which show the need to use digital technologies in higher school and the expediency to differentiate education in accordance with the changing needs of students. When developing a blended learning model, it is necessary to carefully study a training program, the needs of students, and only then the technology. It is also necessary to make sure that this program is really suitable for a blended learning model. Digital technologies allow students to work at their own pace, opening up the potential for advancement. In turn, teachers can increasingly differentiate training according to the changing needs of students.

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Keywords

Educational environment, university, digitalization, digital technologies, blended learning, differentiated learning, student.

Introduction

Digital technologies penetrate into all spheres of human activity, including the educational sphere [Aisner, Naumov, The digital environment..., 2020]. They are becoming an integral part of the holistic educational process, significantly increasing its effectiveness. Higher education institutions are looking for new ways to improve the quality of education, increase student engagement and manage knowledge resources [Agapova, 2019]. The educational process in Russian universities is undergoing a serious transformation: digitalization processes are expanding, new models of training courses are being mastered (blended learning, MOOC learning), many digital technologies are being introduced [Aisner, Naumov, Digitalization of education..., 2020].

The emergence and development of blended learning

When it comes to blended learning, researchers formulate the definition of this term in different ways. However, all formulations can be reduced to the main thing: blended learning is an approach that combines various formats of full-time and distance interaction between students, teachers and educational resources [Afzalova, 2017].

Blended learning is used when:

- 1) part of the time, students study in the classrooms, and the other part – online, synchronously or asynchronously;
- 2) the course takes place entirely in a traditional format, but digital resources, such as LMS, are used to form curricula and communicate;
- 3) distance learning has synchronous and asynchronous formats.

Blended learning originated long before the emergence of the public Internet. Josh Bersin in his work “The blended learning book: best practices, proven methodologies, and lessons learned” identifies four stages in the development of this approach to learning [Bersin, 2004]:

– 1960s-1970s: mainframe-based learning.

Among the first high-tech examples is the PLATO computer system developed by the University of Illinois, which contains educational courses in a variety of disciplines and is used for teaching in all educational institutions. It was on PLATO that electronic tests, forums and chats, a screen demonstration mode and online games first appeared.

– 1970s-1980s: learning through broadcasting.

In the USA in the seventies, video broadcasts using satellite communications spread. In large companies, employees were trained by an instructor on the screen. With the help of special technical means, he could even be asked questions. And universities broadcast lectures by professors for part-time students.

– 1980s-1990s: educational courses and programs on CD.

The training programs could be used in high-quality video and audio format and had wide interactive possibilities at that time.

– 1998-these days: integration of the online format into the learning process.

Initially, educational content developed for CD was simply uploaded to the Internet, but it did not work very effectively. Since then, many new, more convenient and useful tools and high technologies have appeared both in the classroom and outside it.

Models of blended learning

There can many models in which blended learning is implemented. This is a flexible approach that allows you to customize the learning process for specific educational tasks and the audience [Agapova, 2021]. There are seven basic models that are not mutually exclusive and can be combined in one form or another (table 1).

Table 1 - Models of blended learning

Model	Description
Extended full-time model	This is an ordinary classroom model, to which a teacher adds online activities from time to time to replace, expand or supplement traditional methods.
Changing formats	Students move from one format to another. But there must be online training among them. For example, after a lecture, students work on a project in teams, and then do an educational online game or a test. This approach differs from the extended full-time model in the systematic nature of online classes.
Changing work areas	This model is very similar to changing formats, but a teacher also divides the class into groups, each of them is engaged in its own type of educational activity, and after a while the groups change places. For example, while one group works with a teacher, the second one – on a project, and the third one is engaged in the Moodle system [Aisner, Naumov, 2021].
Inverted learning	According to this model, students independently master theory using materials prepared in advance by a teacher (for example, pre-recorded online lessons), and in the classroom they discuss complex issues and practice their knowledge.
The “on request” model	This is an option for independent students – adults or at least high school students. On their own initiative, they complement traditional full-time classes with online courses.
Flexible model	Students plan their own training, which takes place mainly online. They attend educational institutions, but they are not limited by a schedule or a choice of activities. Teachers in this model act more like tutors.
Extended virtual model	In this approach, students study mainly on an online platform [Agapova, 2020], and remotely, but the educational process also includes face-to-face consultations with a teacher or a tutor.

Advantages and disadvantages of blended learning. We can identify the following advantages of blended learning (table 2) [Agapova, Aisner, 2018; Mamontova et al., 2020]:

Table 2 - Advantages of blended learning

Advantage	Description
Interactivity	With the help of new technologies, it is possible to achieve greater involvement of students in work (for example, games, tools for creating their own projects, etc.).
Taking into account different needs	Blended learning is suitable for those who need contact with a teacher, and those who prefer to study independently, and also helps in working with children with disabilities.
Eliminating gaps in knowledge	Special online programs help students missing the classes.
Continuity	Blended learning involves constant access to educational resources.
Visible progress	It is easy to monitor the results of students; it is convenient not only for teachers, but also for students themselves.
Usage for different levels	With the help of computer technologies, some students can repeat the same material many times, while others can go ahead without waiting for anyone.
Convenient control and feedback	We can control when a student entered the system and how his independent studies were held. Online tests can automatically evaluate the results and give feedback.

Let's consider the main disadvantages of blended learning and suggestions for overcoming them (table 3) [Kurbatova, Aisner, Krasnousov, 2022]:

Table 3 - Disadvantages of blended learning and suggestions for overcoming them

Problem	Solution
A low level of students' digital competence	It is necessary to instill computer and Internet skills in students, explain and show how to work on a specific platform.
A low level of teachers' digital competence	It is necessary to train teachers to use a computer and the Internet, explain and show how to work on a specific platform.
Low motivation of students	It is necessary to motivate students to study independently using an interactive form of work.
A poorly compiled program or lesson	It is necessary to review the training program and determine which elements should be in a full-time format and which ones should be transferred to an online format.

Conclusions

After conducting a survey among students of the first and second bachelor and specialty courses of Krasnoyarsk State Agrarian University, the following results were obtained: 70% of respondents believe that it is necessary to use blended learning in different formats, for example, theoretical classes can be held online, and practical ones can be held in the classroom, or all classes are in a traditional format, and the survey is on the Moodle platform, etc.; however, 15% of students are confident that digital technologies do not positively affect their work. In a survey of undergraduate students, it is revealed that 90% would like all classes (both theoretical and practical) to be held online only; all respondents noted the positive impact of digital technologies on their work. Accordingly, the following conclusions can be drawn: 1) digital technologies are important for students of all levels of higher education (bachelor course, specialty, master course), however, students of primary levels prefer blended learning more. As for undergraduates, they tend to study online due to their workload. When developing a blended learning model, it is necessary to carefully study a training program, the needs of students, and only then the technology. It is also necessary to make sure that this program is really suitable for a blended learning model.

Digital technologies allow students to work at their own pace, opening up the potential for advancement. In turn, teachers can increasingly differentiate training according to the changing needs of students.

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Создание непрерывной образовательной среды посредством применения моделей смешанного обучения

Агапова Тамара Вадимовна

Кандидат культурологии, доцент,
Красноярский государственный аграрный университет,
660130, Российская Федерация, Красноярск, пр. Мира, 90;
e-mail: agapova-07@mail.ru

Айснер Лариса Юрьевна

Кандидат культурологии, доцент,
Красноярский государственный аграрный университет,
660130, Российская Федерация, Красноярск, пр. Мира, 90;
e-mail: larisa-ajsner@yandex.ru

Аннотация

Развитие современного общества характеризуется сильным влиянием на него цифровых технологий, которые проникают во все сферы человеческой деятельности, включая образовательную сферу. Цифровые технологии стали частью целостного образовательного процесса, значительно повышающие его эффективность. Современная система образования нацелена на вхождение в мировое информационно-образовательное пространство. Высшие учебные заведения находятся в постоянном поиске путей улучшения качества образования и управления ресурсами знаний, осваивая новые форматы обучения (смешанное обучение, образовательный коворкинг, WIKI, форсайт-лаборатория и т.д.) и вводя большое количество цифровых технологий. В статье речь идет о смешанном формате обучения: определяется его понятие, рассматриваются особенности, история развития, положительные и отрицательные

стороны, обозначаются наиболее востребованные и действенные модели. Авторы представляют результаты своих исследований, которые показывают необходимость использования цифровых технологий в высшей школе и целесообразность дифференцированного обучения в соответствии с меняющимися потребностями обучающихся.

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Ключевые слова

Образовательная среда, вуз, цифровизация, цифровые технологии, смешанное обучение, дифференцированное обучение, обучающийся.

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