

Managing the Learning Process in the Context of Blended Education

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Abstract— This article explores the methods of organizing and managing the learning process in the context of blended education (BE). It examines its basic principles, including flexibility, interactivity, accessibility and individualization, which contribute to the adaptation of the educational process to modern challenges. The article analyzes the main models of BE, such as the rotational model, the flipped classroom, the hybrid flexible model, and enriched virtual learning. The advantages and limitations of each model are presented, as well as their application in various educational contexts. Special attention is given to the role of the teacher as an organizer, mentor, and motivator within the framework of BE. The importance of digital tools for enhancing student engagement, providing feedback, and creating a flexible learning environment is emphasized.

Keywords—Blended education (BE), learning management, interactive methods, digital technologies, individualization.

I. INTRODUCTION

In the context of rapid technological advancements and the transformation of the educational landscape, blended learning (BL) has become one of the primary approaches to organizing the learning process. This model combines traditional face-to-face learning with elements of online education, creating flexible and adaptive conditions for knowledge acquisition and skill development.

The relevance of this study is driven by the need to develop and implement effective methods for managing the learning process within the framework of BL. This approach requires educational institutions, teachers, and students to adapt to new technologies and changes in traditional pedagogical practices. Such a format not only enhances the accessibility of education but also improves the quality of learning by utilizing interactive methods and digital resources. The objective of this research is to explore and analyze methods for organizing and managing the learning process in the context of BL.

II. MAIN PART. DEFINITION OF BL

The educational approach that combines elements of traditional face-to-face learning with digital and distance formats is called BL (fig. 1).

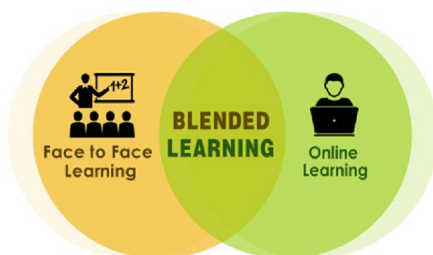


Fig. 1. Model BL

This method seeks to develop a hybrid model, where the educational experience is divided between face-to-face classes and self-directed tasks in a digital setting. It is essential to understand that BL is not just a mix of various formats but a

systematic integration of in-person and online elements aimed at providing a unified learning experience.

Overseeing the learning process in this context necessitates the use of principles that guarantee the adaptation and efficiency of the educational experience. These principles assist in organizing educational resources and technologies while also fostering a learning environment that encourages the holistic development of students and their engagement in learning activities. A central principle of BL is flexibility, as it combines elements of both traditional in-person and digital distance education. The principle of flexibility allows the learning process to be adapted to the individual needs of students, as well as to specific learning tasks and subjects. It can manifest on several levels: in time, content, and teaching methods. For example, students can allocate their learning time, combining in-person classes with independent work in the digital environment, which allows them to accommodate their personal rhythm and individual learning abilities. Teachers, in turn, can quickly adjust learning materials and adapt them based on the group's level of preparation, using digital platforms to update information and provide additional resources.

Interactivity is another principle that plays an important role in managing BL. It entails lively engagement among students, the educational resources, teachers, and one another, fostering not just improved knowledge retention but also enhancing critical thinking, collaboration skills, and self-reliance. Digital resources like forums, online discussion spaces, web surveys, and quizzes enable educators to sustain a strong degree of student participation and feedback . Interactive elements, such as tests with instant feedback, group projects in virtual environments, and interactive learning tasks, help involve students in the learning process, making it more dynamic and engaging.

The principle of accessibility ensures equal access to educational resources for all participants in the learning process. In the context of BL, this means providing students with the ability to access learning materials and assignments anytime and from any location, which is especially important for students in remote regions or those with limited

opportunities to attend in-person classes. Within this principle, educational institutions must ensure that students have the necessary technical tools and create conditions for accessing educational platforms and resources through mobile devices and other digital channels. Accessibility also implies that educational materials are designed with inclusive principles in mind.

The implementation of BL provides significant opportunities for individualizing the learning process. It allows the creation of personalized learning paths for each student based on their level of preparation, interests, and goals. Digital platforms can automatically analyze students' progress and offer tasks that match their current knowledge level. Educators also obtain analytical data, enabling them to modify their strategies for each student, assisting them in overcoming obstacles and effectively reaching their objectives. This method encourages student autonomy and enthusiasm, as they perceive the learning experience as customized to their individual needs.

For effective management of the learning process in a BL environment, continuous feedback and monitoring are crucial. This format enables instructors to constantly track student progress through built-in analytics and assessment tools on educational platforms. This facilitates the timely identification of challenges students may face and allows for prompt support. Formative assessment, that is, intermediate evaluation of knowledge and skills, is an essential component of feedback. It allows instructors to observe students' progress in real time and adjust the course content and teaching methods based on this data.

The principle of autonomy implies that students take responsibility for their own learning, including time management, task completion, and goal achievement. Students learn to plan their time independently, choose appropriate learning methods, and engage in interactive and practical activities. This promotes the development of self-organization skills, which are important for future professional success.

Effective management of BL requires a comprehensive approach, encompassing the principles of flexibility, interactivity, accessibility, individualization, continuous feedback, and autonomy. This helps create an environment in which students feel engaged and motivated, and have the opportunity to develop at their own pace.

III. METHODS OF ORGANIZING THE LEARNING PROCESS IN THE CONTEXT OF BL

Organizing the learning process within the framework of blended education (BE) requires the use of various methods and approaches that combine online and offline classes, electronic educational resources, as well as individual and group work formats. Modern methods of organizing such learning involve a structured combination of online and offline sessions using digital educational resources. In-person activities, including lectures, seminars, and lab work, enable teachers to engage directly with learners, facilitate discussions, offer feedback, and assess knowledge retention. Face-to-face sessions are vital for honing practical skills, particularly in

fields that involve laboratory tasks or teamwork, where personal interaction and cooperation are key.

Electronic educational resources play an important role in BL. These consist of multimedia resources, video tutorials, engaging tasks, web-based assessments, and virtual labs. These resources allow students to interact more thoroughly with the content, while also enabling teachers to facilitate chances for active involvement in the learning experience. Contemporary educational platforms (Moodle, Canvas, Google Classroom, Blackboard) promote engagement among students and educators while offering resources for evaluating understanding, tracking advancement, and delivering feedback.

The main BE models seek to integrate in-person and remote formats to establish a flexible and adaptable learning environment. These models vary in their frameworks, techniques, and ways of structuring the learning experience, enabling educators to select the most appropriate format based on the course goals, students' readiness levels, and the nature of the subject matter.

The rotational model involves rotating students between various types of activities and assignments. In this model, students may alternate between in-person sessions, group or individual work, and online assignments. A demonstration of the rotational model involves splitting the class into multiple groups, with each group rotating through various tasks: one group collaborates with the teacher in the classroom, another completes assignments online, and the third concentrates on projects or research work.

The flipped classroom approach recommends that students independently learn theoretical content through video lectures, online classes, or various digital tools, while face-to-face class time focuses on more in-depth exploration of the subject, discussions, tackling problems, and carrying out practical tasks. The main concept is that students arrive in class with a foundational grasp of the subject, enabling the teacher to concentrate on more intricate elements of the content and offer tailored assistance to each student.

The hybrid flexible model (HyFlex) provides students with an option to join classes in person, engage online in real-time, or view recorded sessions at a later time. This method seeks to develop an environment that enables students to participate in learning regardless of their situation or whereabouts. Educators utilizing the HyFlex model must prepare their lessons to ensure that all students, no matter which format they select, obtain an equally high-quality learning experience.

The enhanced virtual learning model relies on a digital platform as the main medium for education, with occasional in-person meetings for more thorough investigation of the content or for finishing practical tasks. In this model, the majority of the content is available online, while conventional face-to-face sessions serve as a supportive element aimed at enhancing and deepening students' comprehension.

Each of these models has its strengths and is suitable for different educational contexts. Table 1 presents a comparative analysis of the advantages and limitations of these models.

TABLE I. Comparative analysis of BE models [2, 3]

The BE model	Advantages	Appropriate educational context
The rotary model	It provides a variety of formats and activities, allows you to individualize learning through group tasks at different stations, and promotes the development of practical skills.	It is suitable for primary and secondary classes, as well as for disciplines where practical application is important, such as mathematics and natural sciences.
The «inverted class» model	It allows you to focus on the practical application of knowledge in the classroom, promotes the development of self-study skills, and actively involves students in the learning process.	It is effective for high schools and universities, especially for disciplines with theoretical content, such as humanities and programming.
Hybrid flexible model	Provides maximum flexibility by allowing students to choose a format (face-to-face, online or recording), ensures accessibility for students with different learning needs and conditions.	It is suitable for adults and additional education, especially for advanced training courses and business training, where flexibility is important.
The model of enriched virtual learning	It provides high flexibility and accessibility, allows students to plan their own study time, supports distance learning programs, and is suitable for self-study.	It is suitable for high school, higher education and distance learning programs, especially for courses with a theoretical focus such as management and humanities.

According to the author, the choice of the BL model should be based on the nature of the academic disciplines, the level of student preparedness, and the specifics of the educational context. Each model has its unique features, which can enhance the effectiveness of learning when implemented correctly. Their successful application requires a balanced approach, taking into account their advantages and limitations, as well as the availability of the necessary infrastructure. An optimal combination of models and their adaptation to the specific needs of students ensures flexibility, engagement, and support, which are particularly important in the context of modern education.

Education combining traditional and digital teaching methods is widely used in educational institutions. In elementary schools in the USA, the rotational model is used. Students are divided into groups and rotate between different stations. This approach allows for the consideration of individual student needs and helps maintain their interest in learning [4].

In the Los Angeles Unified School District, many schools have implemented the flipped classroom model. Students study new material at home through video lectures and online resources, while class time is dedicated to practical assignments and discussions under the guidance of the teacher. This allows for more effective use of class time, focusing on deeper understanding of the material [5].

In schools in Kyrgyzstan, the hybrid model of learning has been introduced. Students combine traditional lessons with the

use of electronic educational resources. For instance, in mathematics lessons, part of the class is conducted in person, while the other part is conducted online using educational platforms, which allows the learning process to be adapted to students' individual needs [6]. These examples demonstrate the successful implementation of various BL models, adapted to the specific needs and capabilities of educational institutions in the USA and Kyrgyzstan.

IV. THE ROLE OF THE TEACHER IN BL

In the context of BL, the role of the teacher extends beyond traditional teaching and includes managing the learning process, supporting and motivating students, using digital tools, and fostering effective interaction. The teacher becomes an organizer, mentor, and coordinator, guiding and supporting students, making the learning process flexible and adaptable to their individual needs.

Managing the learning process requires the teacher to be flexible in choosing methods and teaching strategies. The teacher plans and organizes the material in a way that online and offline formats complement each other harmoniously. The teacher also designs individualized learning pathways for students, integrates digital tools, and monitors progress using platforms for managing the learning process. Thus, in a BL environment, the teacher not only imparts knowledge but also structures the educational environment, providing access to digital resources and supporting independent learning.

Motivation plays a crucial role in successfully mastering the curriculum, especially in BL environments where part of the learning process occurs without direct teacher involvement. Due to the need for independent work and the use of digital platforms, maintaining student interest requires active efforts from the teacher.

To maintain motivation, the teacher uses methods such as gamification, which makes learning more engaging and promotes student involvement through game-like elements such as points, levels, and rewards for completing tasks. Gamification helps make the learning process dynamic and maintains student interest in the academic activities [7]. Personalization of learning is another effective method that takes into account the individual interests, needs, and learning paces of each student. A personalized approach, including task adaptation and recommendations, makes the learning process meaningful for each student, enhancing their motivation and engagement.

Creating problem-solving situations also contributes to maintaining interest, as it stimulates critical thinking and active engagement in the learning process. The teacher creates situations that require analysis, problem-solving, or argumentation, encouraging students to use their knowledge and skills to overcome challenges. Problem-solving tasks develop critical thinking skills and make the learning process more engaging and relevant to students. Digital tools such as forums, chats, video conferences, and file-sharing platforms allow the teacher to maintain constant contact with students, which enhances their engagement and strengthens the teacher-student relationship. Feedback is a central element of digital interaction in BL [8]. It helps students navigate the learning

process, adjust their approaches, and feel part of the educational community. The teacher provides regular and detailed feedback using the capabilities of educational platforms, such as comments on assignments, direct messages, and automated reports. Quick and effective feedback supports student motivation, as it helps them see their progress and identify areas for improvement.

Thus, in the context of BL, the teacher's role integrates the functions of an organizer, mentor, motivator, and communicator. Maintaining motivation and interest in learning becomes a priority task, requiring the teacher to apply diverse approaches.

V. CONCLUSION

One of the most sought-after approaches in the context of rapid digital technology development and the transformation of the educational landscape is BL. By combining traditional and digital teaching methods, it creates a flexible and adaptive learning environment that meets the diverse needs of modern students and fosters their holistic development. The implementation of this format not only improves the accessibility of education but also enhances its quality, offering new interactive and personalized ways to engage with learning materials.

This approach to education offers unique opportunities to adapt to the new digital world, helping prepare students for future professional challenges. A comprehensive approach to implementing BL models, such as the rotational model, flipped classroom, hybrid flexible model, and enriched virtual learning, will enable educational institutions to achieve

sustainable results and ensure high-quality education in a changing environment.

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