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ОНЛАЙН-НАВЧАННЯ ТА ОФЛАЙН-НАВЧАННЯ: НОВІ ПІДХОДИ ТА ГІБРИДНІ МОДЕЛІ

Анотація. Стаття присвячена сучасним тенденціям освіти, пов'язаним з розвитком онлайн, офлайн та гібридних моделей навчання. Пандемія COVID-19 виявила потенціал та обмеження дистанційного навчання: гнучкість, масштабованість та можливості персоналізації поєднуються з недоліком безпосередньої соціальної взаємодії та практичного досвіду. Розглядається поняття змішаного навчання як поєднання очного досвіду та онлайн-інструментів, а також розвиток гібридної педагогіки. Гібридне навчання вимагає переосмислення проектування навчального процесу, управління групою у фізичному та віртуальному просторі, встановлення значних зв'язків з усіма здобувачами вищої освіти та ефективної оцінки їхнього прогресу.

Особлива увага приділена відмінностям між офлайн- та онлайн-навчанням: очне навчання забезпечує спільну взаємодію, проведення експериментів та проєктних завдань, у той час як онлайн-викладання пропонує розмаїття навчальних ресурсів, доступ у будь-який час та будь-якому місці, персоналізоване та самоспрямоване навчання, індивідуальне навчання, диференційоване навчання у індивідуальному темпі без обмеження розмірів класу. Гібридна модель інтегрує сильні сторони обох підходів, забезпечуючи гнучкість, розширений доступ до навчання, ефективне управління ресурсами, зниження прогулів, задоволення потреб усіх здобувачів, покращений зворотний зв'язок та підвищення залученості.

Гібридне навчання також сприяє інклюзивності, дозволяє залучати іноземних здобувачів та здобувачів вищої освіти з різних регіонів, оптимізує використання ресурсів та знижує навантаження викладачів. Інтеграція освітніх технологій, попередньо записаних відеоматеріалів, підходів «перевернутого класу» та інструментів на основі штучного інтелекту робить процес навчання більш персоналізованим, адаптивним та залучаючим. Таким чином, гібридна модель створює ефективний освітній досвід, здатний задовольнити різноманітні потреби здобувачів та відповідати вимогам сучасного цифрового суспільства.

Таким чином, інтеграція онлайн та офлайн форматів через гібридне навчання створює більш ефективний, залучаючий та адаптивний освітній досвід, що відповідає потребам сучасного суспільства та вимогам швидко мінливого світу.

Ключові слова: гібрідне навчання, змішане навчання онлайн-навчання, офлайн-навчання, освітній досвід.

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ONLINE LEARNING AND OFFLINE LEARNING: NEW APPROACHES AND HYBRID MODELS

Annotation. The article is devoted to modern trends in education related to the development of online, offline, and hybrid learning models. The COVID-19 pandemic revealed both the potential and the limitations of distance learning: flexibility, scalability, and personalization opportunities are combined with a lack of direct social interaction and practical experience. The concept of blended learning is considered as a combination of face-to-face experiences and online tools, as well as the development of hybrid pedagogy. Hybrid learning requires a rethinking of curriculum design, managing a class in both physical and virtual spaces, establishing meaningful connections with all students, and effectively assessing their progress.
Particular attention is paid to the differences between offline and online learning: face-to-face learning provides collaborative interaction, experimentation, and project-based tasks, while online teaching offers a variety of learning resources, access anytime and anywhere, personalized and self-directed learning, individualized instruction, differentiated learning at an individual pace, without limitations on class size. The hybrid model integrates the strengths of both approaches, providing flexibility, expanded access to learning, effective resource management, reduced absenteeism, meeting the needs of all students, improved feedback, and increased student engagement.

Hybrid learning also promotes inclusivity, allows the participation of international students and learners from different regions, optimizes the use of resources, and reduces the workload of instructors. The integration of educational technologies, pre-recorded video materials, flipped classroom approaches, and AI-based tools makes the learning process more personalized, adaptive, and engaging. Thus, the hybrid model creates an effective educational experience capable of meeting the diverse needs of students and addressing the demands of modern digital society.

In this way, the integration of online and offline formats through hybrid learning creates a more effective, engaging, and adaptive educational experience that meets the needs of contemporary society and the demands of a rapidly changing world.

Keywords: hybrid learning, blended learning, online learning, offline learning, educational experience

Problem statement. The landscape of education has undergone a dramatic transformation over the past decade, largely driven by technological advancements and the increasing need for flexible learning environments. Traditional offline learning, characterized by face-to-face interaction in classrooms, has long been the foundation of educational systems worldwide. However, the rise of online learning platforms, virtual classrooms, and digital resources has introduced new possibilities, enabling students to access education anytime and anywhere.

The COVID-19 pandemic further accelerated the adoption of online learning, highlighting both its potential and its limitations. While online education offers flexibility, scalability, and personalized learning opportunities, it often lacks the immediacy of social interaction and hands-on experiences that offline learning provides. This contrast has sparked a growing interest in hybrid models that combine the strengths of both approaches, seeking to create a more balanced, effective, and adaptable educational experience.

The relevance of this topic lies in the increasing demand for innovative and adaptive learning solutions that can meet the diverse needs of modern students. Educational institutions worldwide are exploring hybrid approaches to enhance student engagement, improve learning outcomes, and prepare learners for a rapidly changing world. Understanding the benefits, challenges, and best practices of online, offline, and hybrid models is crucial for educators, policymakers, and curriculum designers aiming to optimize the learning process.

The rapid shift to online learning has highlighted both the potential and limitations of traditional and digital education models. While online learning offers flexibility, scalability, and personalized learning, it often lacks the direct social interaction, hands-on experience, and engagement that face-to-face learning provides. Conversely, traditional face-to-face education can limit access, pace, and adaptability to the diverse needs of learners. This poses a critical challenge for educational institutions: how to design and implement a learning model that combines the strengths of online and offline methods, ensures inclusivity, supports high levels of engagement, and meets the diverse academic, technological, and social needs of higher education students in a rapidly changing digital society.

Analysis of the latest studies and publications. Blended learning, which strategically combines online and offline instruction, has deep roots in distance education but saw its formal development accelerate with the rise of digital technologies. While the term itself was initially vague, several influential methodologists and organizations helped define, categorize, and theorize its effective application.

Charles R. Graham is a highly influential academic, researcher, and editor whose primary contribution was providing a clear and much-needed theoretical and structural foundation for the concept of blended learning. Prior to his work, the term “blended learning” was often ambiguous, leading to varied and inconsistent applications across educational settings. In the landmark Handbook of Blended Learning: Global Perspectives, Local Designs (2006), which he co-edited with Curtis J. Bonk, Graham offered a definitive and widely adopted framework. He

defined blended learning systems as those that "combine face-to-face instruction with computer - mediated instruction." This concise definition was critical because it eliminated ambiguity by shifting the focus from merely mixing technologies to strategically integrating two distinct instructional modalities; provided researchers and practitioners with a shared theoretical language that enabled more rigorous analysis and consistent implementation of blended learning models; and ultimately set the stage for future discussions on instructional design within hybrid educational environments [9].

B. D. Randy Garrison, Terry Anderson, and Walter Archer are influential educational researchers and theorists best known for developing the Community of Inquiry (CoI) framework in 2000. Although not devoted exclusively to blended learning, the CoI framework has become one of the most valuable theoretical models for designing effective online and blended courses. It proposes that meaningful learning emerges from the intersection of three essential presences: teaching presence, encompassing the design, facilitation, and direction of learning; social presence, which supports affective communication, interpersonal connection, and group cohesion; and cognitive presence, focused on constructing meaning through sustained discourse and reflection. Together, these presences offer a comprehensive roadmap for ensuring that the online (typically asynchronous) and face-to-face (or synchronous) components of a blended learning environment work in concert to build a strong learning community and support deep, engaged learning [8].

Aaron Sams and Jonathan Bergmann, former high school science teachers, are widely recognized for pioneering and popularizing the Flipped Classroom model in 2007. Their innovative approach used online videos for students to access instructional content asynchronously at home, freeing up valuable face-to-face class time for active learning, guided practice, problem-solving, and individualized support. This shift fundamentally transformed the traditional use of classroom time from passive content delivery to personalized mastery learning. The influence of their work helped establish the pedagogical value of integrating online instructional resources with the collaborative and social strengths of the in-person classroom, making the Flipped Classroom one of the most prominent and widely adopted models of blended learning. Their work focuses on optimizing face-to-face class time by moving direct instruction (lectures) to the online, asynchronous space [2].

Chris Dede, a Professor of Learning Technologies at the Harvard Graduate School of Education, is a leading visionary in the integration of advanced and emerging technologies into educational practice, an essential component of effective hybrid learning design. His work focuses on creating multimodal learning experiences using immersive technologies, such as augmented and virtual reality, enabling virtual field trips and rich collaborative environments known as Multi-User Virtual Environments. Additionally, Dede's extensive research on hybrid and online learning examines how innovative digital tools can enhance human capabilities for knowledge creation, collaboration, and personalized mastery, thereby expanding what learners can achieve in blended and technology-supported educational settings [4].

Anthony G. Picciano is a prominent scholar in the field of educational technology and higher education who has made significant contributions to the study and development of blended learning. His research focuses on how blended learning models can be effectively designed and implemented within higher education institutions to improve teaching quality and student learning outcomes. Picciano has examined the pedagogical foundations of blended learning, emphasizing the intentional integration of online and face-to-face instruction rather than the simple addition of technology to traditional courses.

A key aspect of Picciano's work is his analysis of instructional models for blended learning. He proposed frameworks that align learning objectives with teaching methods, assessment strategies, and technological tools, highlighting the importance of coherence in course design. His research stresses that blended learning should be guided by pedagogical goals and learner needs, not by technology alone. Picciano has also investigated learning outcomes associated with blended learning environments, comparing them with traditional and fully online formats. His findings suggest that well-designed blended courses can enhance student engagement, flexibility, and academic performance, while also supporting diverse learning styles. He emphasizes the role of interaction – between students, content, and instructors -as a critical factor in successful blended learning experiences.

In addition, Picciano has explored institutional strategies for implementing blended learning at scale. He addresses issues such as faculty development, organizational change, quality assurance, and the role of learning management systems in supporting hybrid instruction. His work highlights the need for institutional policies and support structures that enable sustainable adoption of blended learning in higher education.

Overall, Picciano's research positions blended learning as a strategic and pedagogically grounded approach that can enhance access, quality, and effectiveness in higher education when thoughtfully designed and institutionally supported [14].

This article aims. The article aims to examine online, offline, and hybrid learning models, highlighting their advantages, limitations, and distinctive features. It seeks to explore how hybrid learning can integrate the strengths of both approaches to enhance students.

Presentation of the main material. Higher education is experiencing a profound transformation as modern instructional approaches become more deeply integrated into traditional academic practices. While classic methods such as lectures and seminars continue to serve as the foundation of university teaching, they are increasingly being complemented –or in some cases substituted - by innovative strategies that prioritize interaction, personalization, and real-world application. This evolution is fueled by expanding access to digital technologies, the growing emphasis on skills relevant to the future, and the need to engage students more actively in the learning process.

Many universities have already taken significant steps by adopting digital tools that merge conventional classroom instruction with flexible, mobile learning opportunities in hybrid formats [10].

The concept of traditional education has undergone a significant transformation in recent years, intensified by shifts occurring within higher education itself: reduced financial support, rising student – faculty ratios, and a growing number of part-time students, all of which have contributed to the expansion of online learning. Consequently, many part-time learners now choose online courses over conventional in-person formats. It has therefore become clear that computers and the internet have opened access to education for individuals who might otherwise be unable to participate in the traditional university system [7].

Prior to the 21st century, blended learning referred to the combination of different learning methods, such as integrating audio-visual media, slide presentations, audio recordings, and video recordings with traditional approaches like chalk-and-blackboard teaching; combining computer-assisted learning with conventional methods; and merging autonomous learning with collaborative learning styles. With the advent of the 21st century, the widespread use of the Internet and the rise of e-learning (digital or networked learning) expanded the concept of blended learning, giving it a new dimension. Zhu Zhiting defined blended learning as an approach that delivers the "appropriate" abilities to the "appropriate" learners at the "appropriate" time, using the "appropriate" learning technologies and methods to achieve optimal learning outcomes. This definition presents blended learning in a broad sense and has been widely accepted [12].

In recent years, the concept of "blended learning" has been widely discussed, with a general agreement that it involves a mix of face-to-face experiences, such as in-person classroom interactions, and online learning activities. Blended learning can be defined either as the integration of tools within an e-learning environment or as the combination of various pedagogical approaches, regardless of the technologies employed [7].

Hybrid pedagogy has evolved from blended learning, which traditionally involves combining online and face-to-face instruction. In a hybrid model, however, the distinction between digital and on-campus learners disappears entirely. The demand for hybrid learning has been growing for many years. In situations where institutions and students wish to continue their studies but cannot meet in person, synchronous online sessions have typically been used. Yet, in many cases, some students still attend classes on campus while others participate remotely at the same time.

This creates a new layer of complexity: hybrid teaching is far more than simply delivering lessons online. It requires educators to rethink how they design instruction, manage a classroom that spans physical and virtual spaces, build meaningful connections with all students, and evaluate their learning progress effectively [13].

For the integration of online and offline teaching, we must first analyze the essential differences between offline teaching and online teaching. Offline teaching has the form of teachers teaching students listening to lectures but also has the form of teachers and students talking together, doing experiments, completing project tasks, full of challenges and innovation. Online teaching has a self-learning mode

through online answers, statistics and feedback, a self-adaptive learning mode based on students' various learning data diagnosis and push personalized learning resources, a form of students watching unified recording video, a form of simultaneous live teaching between teachers and students, and a form of watching recording video and offline interaction.

Compared with traditional in-person instruction, online teaching offers distinctive capabilities such as abundant learning resources, access at any time and place, personalized and self-directed learning, differentiated instruction, data-driven diagnostics, customized resource recommendations, and notably strong outcomes in knowledge and skill acquisition. Online environments are also not restricted by fixed class sizes. Students can progress at different paces, selecting content and resources that suit their individual abilities. They can review and reinforce material as often as needed through on-demand access and video playback, meeting diverse learning needs and varying time requirements for the same content. Thus, while both online and offline teaching come with certain limitations, each possesses unique strengths that the other cannot fully replace [6].

It is essential to understand students' opinions regarding different modes of learning, as each learner is unique, with distinct interests and learning needs. Many students find online classes more comfortable because they eliminate the need for commuting. Online learning also offers greater flexibility, allowing students to learn at their own pace and, according to their perceptions, more effectively. Students appreciate online classes for their interactive nature and for providing access to multiple sources of information, which helps them prepare notes and complete assignments and projects. Additionally, online learning enables students to enroll in multiple courses of their choice from institutions around the world and attend classes at their convenience. Students also consider online education to be more affordable, as it reduces expenses related to textbooks, stationery, and travel. One of the key objectives of online learning is to encourage flexible and meaningful interaction between teachers and students. Offline classes provide a physical learning environment where face-to-face instruction helps students develop their interpersonal skills [1].

Many students prefer the classroom atmosphere to studying at home, as they feel it supports better concentration and engagement. Students also believe that they learn more effectively when they take notes during in-person lectures and experience fewer distractions in offline classes. There are several reasons why students favor offline learning, one of the most significant being the open and natural interactions that make classes more dynamic and engaging. Immediate feedback from teachers allows students to improve their assignments and notes by identifying and correcting errors, which in turn enhances their academic performance. Social interaction with peers is crucial for building positive relationships and fostering constructive discussions in a supportive and comfortable classroom environment. Students view classrooms as ideal spaces for developing academic communities where learning occurs freely. Additionally, pre- and post-class discussions enrich face-to-face

learning by adding substantial informational value. Courses completed in the offline mode are often perceived as more practical and therefore receive greater acceptance.

Each mode of learning has its own advantages and limitations; however, its importance in the teaching – learning process cannot be overlooked. During online classes, students and teachers explore a variety of digital tools which, when used effectively, can significantly enhance the learning experience. Students believe that pre-recorded videos can also be integrated to support and improve offline learning. Others suggest that Artificial Intelligence – based tools and flipped classroom approaches can be adopted to make face-to-face classes more engaging. Learners in today's digital age are generally more comfortable applying and integrating technology into learning, as they have had access to technological resources from an early age [14].

Hybrid learning encompasses a wide range of characteristics, which explain its increasing adoption in contemporary education. These characteristics include:

1. Strategic management of resources.
2. Adaptability in learning.
3. Decrease in absenteeism.
4. Accommodating diverse learning needs.
5. Wider access to learning opportunities.
6. Feedback that supports learning improvement.
7. Improved learner involvement.

The flexibility of scheduling and instructional delivery, along with enhanced interaction among peers and between students and teachers, has encouraged many educational institutions to adopt the hybrid learning model. For students who are unable to attend classes in person, hybrid learning provides the opportunity to continue their studies online. The COVID-19 pandemic forced hundreds of thousands of schools and universities worldwide to shift to distance learning, highlighting the growing need for flexibility in education. Even as COVID-19 becomes a distant memory, such flexibility is likely to remain highly valuable within educational systems.

Concerns about health and safety, such as the presence of students or teachers with cold symptoms in classrooms, suggest that educational institutions may need to implement new sanitary regulations to limit the spread of infections. However, when classrooms are equipped with hybrid learning technologies, students and teachers can easily participate remotely when necessary, ensuring continuity of the learning process [7].

Since not everyone has the financial or physical ability to pursue education – particularly during a pandemic – expanding access to learning can help address these challenges and attract a broader range of students. As schools, colleges, and universities continue to develop their educational programs, an increasing number of learners can choose to study online. Students located in different geographical regions can participate in classes virtually with the same level of effectiveness as those attending in person.

The hybrid learning model also makes it possible to offer educational courses to international students without requiring physical relocation. At the same time, this system does not disrupt the learning experience of students who prefer face-to-face instruction. Moreover, hybrid learning has the potential to significantly improve access to education for individuals with disabilities. For instance, the integration of educational technologies enables features such as text-to-speech and speech-to-text, thereby supporting more inclusive learning environments.

Another important advantage of hybrid learning is its capacity to expand and optimize learning resources. Teachers can divide students between in-person and remote participation, which improves space utilization and allows smaller classroom groups to accommodate more learners. Moreover, the adoption of hybrid learning helps reduce teachers' workload, as educational technology tools support the efficient development and management of course materials. By integrating both classroom-based and distance learning approaches, hybrid instruction enables a single course to be effectively delivered through two educational formats simultaneously [3].

Hybrid learning is particularly beneficial in situations involving prolonged absences from classes, such as those caused by students' chronic health conditions. As lessons are typically recorded and made available online, students who miss classes for legitimate reasons can easily review the material and stay up to date with their studies. It is well established that absenteeism has a negative impact on academic performance. Furthermore, this issue often leads to a self-perpetuating cycle, in which declining academic results increase the likelihood of further absences.

Blended learning technology easily adapts to the needs of diverse learners, including those who prefer traditional, in-person group learning, those who favor independent online study, and those who seek to combine both approaches.

By integrating online and offline technologies, teachers can efficiently incorporate the latest trends and instructional methods into their curriculum. For instance, the analytics functions within learning management systems can provide deeper insights into students' progress and performance. Students in a blended learning environment can study, model, and apply new skills in the setting that suits them best. As a result, the material learned is retained longer beyond the classroom or online session, enhancing the overall effectiveness of the educational process.

In blended learning, students enjoy an interactive experience, as they can choose the types of content they engage with and decide how to complete tasks. They maintain continuous communication with both peers and teachers, sharing ideas, discussing relevant topics, acquiring new knowledge, and developing practical skills. This learning model enhances student engagement, strengthens cognitive abilities, and enables teachers to promptly identify areas where students encounter difficulties in mastering the material [11].

However, the development of hybrid learning models in university contexts requires adequate technological infrastructure, as well as teachers' foundational understanding of this approach and the effective use of digital technologies in

education. Teachers must possess the necessary knowledge to design didactic plans and to select and create learning content that is meaningful for students in both face-to-face and remote settings. In contemporary higher education, the hybrid model – integrating in-person and virtual learning – has gained broad acceptance among university instructors. This approach supports the continuous development of competencies and digital educational resources for both students and teachers.

Moreover, it reflects a growing commitment to openness in education, which plays a key role in democratizing the teaching – learning process. The defining feature of this learning model is the integration of virtual and face-to-face components to achieve educational objectives. Within blended learning, the use of technology is reconceptualized as a means of fostering connection and engagement among learners, rather than merely as a tool for transmitting knowledge. Accordingly, technology supports the adoption of distinct roles within the educational process.

Students are placed at the center of learning, assuming an active role characterized by high levels of commitment, responsibility, and motivation.

Teachers act as mediators of learning, leveraging technological tools and possibilities to meet the learning objectives of their courses, academic levels, or educational cycles [11].

Effective interaction between university instructors and students in blended learning requires the design of teaching strategies that integrate both synchronous and asynchronous learning environments. This includes the use of digital repositories as complementary resources for study, review, and practice, thereby reinforcing didactic planning. A hybrid learning environment offers diverse resources and modes of interaction that promote personalized learning and improve educational outcomes. Ultimately, the effectiveness of these strategies depends not only on the digital technologies employed but also on the thoughtful design and implementation of the teaching and learning activities supported by these technologies [5].

The design of learning sequences requires the thoughtful selection and development of teaching materials, along with the identification of resources that align closely with the course curriculum. In hybrid learning environments, these materials are essential for supporting instruction and, in combination with other elements, facilitating the achievement of learning objectives. Therefore, when creating teaching materials, instructors should ensure that content is accessible, engaging, and effective in both virtual and in-person learning contexts.

The selection of teaching materials also involves incorporating existing resources – such as textbooks, scholarly readings, videos, and other relevant materials – identified by instructors for use in both face-to-face and online learning environments. At the university level, a key consideration is the availability of an institutional learning platform that supports the development and management of the virtual learning environment.

Furthermore, the development of teaching materials requires attention to accessibility to provide information in multiple formats and respond to the diversity

of learners. Resources must be compatible with different devices and platforms, and should incorporate varied formats – such as videos, written texts, and interactive presentations – to address diverse learning styles. Universities have a responsibility to facilitate access to higher education by ensuring students have the resources necessary to sustain their studies and by adapting to the diverse conditions present in society.

Overall, the creation and selection of teaching materials in hybrid learning environments are essential to the effective design of learning sequences. Whether newly developed or pre-existing, these materials must be aligned with course objectives and adaptable to both virtual and face-to-face learning contexts. An adaptive approach to instructional design not only strengthens the teaching – learning process but also supports the democratization of higher education by addressing learner diversity [11].

The blended learning approach that integrates online and offline modes for theoretical courses can positively influence students' learning attitudes. Within this model, strengthening the quality management of offline instruction contributes to the improvement of students' learning attitudes, while enhancing the construction and functionality of online learning platforms supports the development of students' autonomous learning abilities. At the same time, universities should reinforce quality management across both online and offline components, as this plays a key role in increasing students' overall satisfaction with blended teaching.

Conclusions. Students' expectations toward the online–offline blended learning mode significantly affect their autonomous learning ability and, consequently, their overall satisfaction. Therefore, higher education institutions need to improve students' expectations of blended learning through various strategies. Furthermore, the effectiveness of online learning platforms, online learning outcomes, and offline learning outcomes are interrelated, making it essential to strengthen all three components simultaneously. Only through this integrated approach can overall student satisfaction be effectively enhanced [9].

Proficiency in online learning tools and digital technologies is becoming increasingly important. By engaging in online and offline hybrid teaching models, students develop experience in navigating digital platforms, communicating effectively in virtual environments, and utilizing emerging technologies for learning. These transferable skills prepare students for future academic pursuits as well as professional careers.

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