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# THE ROLE OF HYBRID LEARNING IN HIGHER EDUCATION

## EL PAPEL DEL APRENDIZAJE HÍBRIDO EN LA EDUCACIÓN SUPERIOR

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## ABSTRACT

The article analyzes the content of the studied concept, shows the difference from the traditional education system and the advantages of hybrid learning in higher education. The methodological advice that should be taken into account when implementing and developing hybrid learning in higher education is presented, the features of hybrid learning in higher education, its factors and components are highlighted. The content of the main models of hybrid learning, which are widely used in the educational process of higher education, is analyzed. In order to prove the significance and innovation of hybrid learning in education, an experimental program was developed to organize the study, which includes the introduction of a methodology for training students through the use of hybrid learning in the educational and scientific activities of students, based on the principles of using mass courses and open education. The results of the study showed that in the EG, during the period of the experimental study, the number of respondents with an initial level of readiness for students to work in hybrid learning decreased and the number of respondents with high, medium, sufficient levels of readiness increased, unlike in the CG. Recommendations for the effective implementation of hybrid learning in the educational activities of students in higher education have been developed.

Keywords:

Hybrid learning, Higher education, Hybrid learning models, Innovative learning, Higher education students.

## RESUMEN

El artículo analiza el contenido del concepto en estudio, muestra la diferencia con el sistema educativo tradicional y las ventajas del aprendizaje híbrido en la educación superior. Se brindan consejos metodológicos que deben tenerse en cuenta al implementar y desarrollar el aprendizaje híbrido en la educación superior. Se destacan las características del aprendizaje híbrido en la educación superior, sus factores y componentes. Se analiza el

contenido de los principales modelos híbridos de aprendizaje que se han generalizado en el proceso educativo de la educación superior. Con el fin de demostrar la importancia e innovación del aprendizaje híbrido en el ámbito educativo, se desarrolló un programa experimental para organizar la investigación, que incluye la implementación de una metodología para la formación de estudiantes mediante el uso del aprendizaje híbrido en las actividades educativas y científicas de los estudiantes. , basado en los principios de utilización de cursos masivos y educación abierta. Los resultados del estudio mostraron que en el GE, durante el período del estudio experimental, el número de encuestados con un nivel inicial de preparación para el trabajo estudiantil en condiciones de aprendizaje híbrido disminuyó y aumentó con niveles de preparación alto, medio y suficiente. A diferencia del CG. Se han elaborado recomendaciones para la implementación efectiva del aprendizaje híbrido en las actividades educativas de los estudiantes de educación superior.

Palabras clave:

Aprendizaje híbrido, Educación superior, Modelos de aprendizaje híbrido, Aprendizaje innovador, Estudiantes de educación superior.

## INTRODUCTION

Hybrid learning is a fairly new approach in the developing global educational system that is in the stage of practical incubation. Over the past decade, an active trend has been observed around the world towards the introduction of hybrid learning, which has great potential for further development of the education sector and is an advanced educational technology. Changes such as the spread of the coronavirus infection and the rapid development of digital technologies have led to dramatic changes in education and all spheres of life. In particular, this includes the use of effective information and pedagogical technologies, education's response to the active search for new approaches to learning, the transition of education to distance learning, the introduction of hybrid learning, and the introduction of innovative forms of organizing the educational process. Undoubtedly, hybrid learning has become an important task for all participants in the educational process. Today, despite the difficult circumstances, education is trying to provide access to education, adapt to new conditions (Solodchuk, 2023).

The American Society for Personnel Development and Training has identified hybrid learning as one of the ten biggest trends in the education industry that have emerged in the world. Such training implies a sharp increase in the number of hybrid courses in higher education institutions – up to 80-90% of all courses. And the quarantine restrictions associated with the COVID-19 coronavirus pandemic have actualized the arguments for the rapid introduction of hybrid learning in educational institutions around the world.

There is a need for competent specialists, and the cornerstone is to improve the professional skills of teachers who are able to engage in self-education by applying non-traditional approaches to self-study. Technological diversification is one of the strategic directions of modernizing modern education by combining electronic and traditional formats of acquiring skills, abilities, and knowledge in the educational process. Today, hybrid learning is a driver of innovative development of higher education worldwide, as higher education institutions are looking for answers (subject to the transition to distance education and the suspension of classroom work for an indefinite period) to the question of readiness to organize an innovative educational process.

Many aspects of our lives are being transferred online in the age of Internet technologies, overcoming geographical barriers and accelerating the pace of development of the information society. The online educational space allows us to make learning comprehensive and complete. However, large-scale, non-alternative distance education and hybrid learning had not been considered as the only possible option before the pandemic (Vyshkivska et al., 2022).

Today, the issue of organizing hybrid learning in higher education is becoming increasingly relevant, as it will allow combining distance learning with face-to-face learning, if the necessary conditions are met.

## MATERIALS AND METHODS

Most studies in this area focus on analyzing general aspects of hybrid learning in the general context of educational institutions. However, there is a lack of research that examines the challenges of hybrid learning in higher education and its impact on the success of the educational component of a future specialist.

The actual aspects related to hybrid learning in higher education are analyzed in depth by Solodchuk (2023), which is an advanced educational technology in our time. Hybrid learning in higher education is recognized as an important tool, as it combines the advantages of modern technological achievements and classical traditional education. The author considers the possibilities of increasing the effectiveness of hybrid learning in higher education; takes into account that recent events have forced higher education institutions to switch to a mixed (hybrid) form of

education and distance learning; investigates the effectiveness of using hybrid learning in higher education in emergency situations and finds out ways to ensure access to quality education for all participants in the educational process. Hybrid learning in higher education is seen as an effective and organic combination of complementary and selected learning technologies and methods of the educational process, including online and face-to-face components. This approach in education emphasizes the combination of traditional with modern technological innovations of teaching methods and proves the need for their in-depth analysis in order to create a flexible and effective learning system. The research aims to study and analyze the modern aspects of hybrid learning in higher education, considering it as a modern norm in the educational system. hybrid learning in higher education provides an opportunity to create an innovative learning process that takes into account students' individual needs, helps to ensure a high level of learning, develops critical thinking of the individual.

In the context of the US experience, Horokhivska (2022) studied the peculiarities of implementing hybrid learning in higher education and discussed aspects of hybrid learning in higher education, showed its impact on the educational processes of higher education institutions. Also, the modern experience of using hybrid learning in higher education in the practice of teachers in other countries was studied by Sereda (2022), who identified the conditions that affect the effectiveness of hybrid learning in higher education. Bodnar (2021) studied the practical problems of using foreign hybrid learning practices in the educational process of higher education.

According to the authors Selskyi et al. (2024) revealed the difficulties of organizing hybrid learning in higher education, in particular at the faculty of foreign students, which have arisen in the educational sector today; they described the experience of foreign students, showed the work and certain difficulties that created classes in a mixed format with combined online/offline academic groups. Methodological recommendations for higher education students on optimizing learning in mixed groups are presented. In which teachers had to modify their teaching strategies, maintain equal involvement of students, and promote meaningful interaction between them.

In the context of hybrid learning, Tkachuk (2019) introduced a methodological system in higher education, which was experimentally tested and substantiated for the effective practical and technical training of future computer science teachers. The study proves that in order to summarize the experience of hybrid learning in higher education, it is important that the structure of the methodological system of practical and technical training of future computer science teachers proposed by the author identifies the organizational, pedagogical, psychological conditions and stages of implementation of hybrid learning in higher education (formation of material and technical base, definition of strategy, design and support of training, creation of information and educational environment).

The organization of independent work in the context of hybrid learning of future computer science teachers (full-time students) is considered by Umryk (2009), where the main sources of knowledge are the information and learning environment that functions in the context of distance learning and the teacher. When organizing hybrid learning in higher education for the purpose of forming and developing a personality, deepening knowledge, work skills, and abilities of students in the distance learning system, as well as for the purpose of forming independence in future specialists, the author introduced elements of distance learning into the classical educational process of higher education.

To implement the generalized e-learning model for managers, Morse & Kuzminska (2017) experimentally tested the applied authors' model of individual rotation – a hybrid rotational model – and demonstrated the positive effect of the blended learning technology on e-learning for managers. The systemic approach led to the following outcomes: promoting the development of 21st-century skills and professional competence, providing each student the opportunity to learn at their own pace and according to their specific needs, increasing personal student engagement, and ensuring individualized learning through the use of the flipped classroom model. For the effective implementation of the hybrid learning model in higher education, K. Buhaichuk (2016) proposes the stages of the implementation model strategy: defining the goal, which involves solving a specific task, improving the methods of teaching professional disciplines, increasing digital literacy and overall performance; development of communicative competencies of students; automation of audience assessment; selection of a hybrid learning model in higher education, which should work to solve specific tasks set by the educational institution; taking into account the human resources.

Hahina & Borysenko (2018) proved that the effective functioning of the hybrid learning model in higher education requires the development of information culture of all participants in the educational process, continuous technical support, provision of technical capabilities, taking into account the peculiarities of e-learning – improving teaching methods, effective use of existing tools of the Moodle platform – training for teachers; creation of methodological recommendations on the model of hybrid learning in higher education for the organization of educational process.

As a result of the study, Tserkovna et al. (2020) concluded that when using hybrid learning technology in higher education, the emphasis is shifted to self-educational and communicative functions from the control and evaluation and information support functions of Moodle. To implement the technology of hybrid learning in higher education, the possibilities of using Moodle are quite sufficient, but the simple use of these elements in the educational process does not guarantee the abandonment of traditional teaching and requires a restructuring of the logic of learning disciplines.

Thus, hybrid learning in higher education is recognized as an important tool for the innovative educational process, as it combines the advantages of modern technological achievements and classical traditional education. The researchers consider the possibilities of increasing the effectiveness of hybrid learning in higher education; take into account that recent events have forced higher education institutions to switch to a mixed (hybrid) form of education and distance learning; study the effectiveness of hybrid learning in higher education in emergency situations and find out how to ensure access to quality education for all participants in the educational process; study the current experience of using hybrid learning in higher education in the practice of teachers around the world.

Identification of previously unsolved parts of the general problem. We believe that online and offline formats of hybrid learning in higher education are not sufficiently implemented and studied.

The purpose of the article is to highlight the theoretical foundations of hybrid learning in higher education institutions, to prove the importance and innovation of this approach in the educational field.

Methods used: Theoretical methods: to substantiate the basic provisions of scientific research, the analysis of methodological literature, psychological literature, pedagogical literature was used; to study world psychological, pedagogical, methodological sources, the interpretative and analytical method was used; for scientific reflection on the development and formation of hybrid learning in higher education institutions, the historical approach to the study of sources was used; to clarify the common and distinctive features of the organization of hybrid learning in higher education institutions, comparative analysis was used.

In order to prove the importance and innovation of hybrid learning in education, an experimental program was developed to organize the study, which includes two stages of the experiment: stating and formative.

During 2022-2023, the experimental work was carried out. It involved master's students majoring in sociology.

The results of the ascertaining stage of the experiment showed that the state of training of specialists in higher education was approximately at the same level in the EG and CG, where insignificant educational and scientific activities were used in the conditions of open distance courses at universities.

At the formative stage of the experiment, the methodology of training masters through the use of hybrid learning in the educational and scientific activities of students based on the principles of using mass courses and open education was introduced. As a result of the study, low, medium, sufficient and high levels of master's students' readiness for education through the use of hybrid learning in students' educational and scientific activities were identified and described.

The number of master's students in the EH was 27, and in the EG – 26. We used the Fisher's $\phi^*$ criterion to test the homogeneity of the grouping. The difference is not significant between the percentages of the samples, so the groups are homogeneously distributed.

The results of the study showed that in the EG, during the period of the experimental study, the number of respondents with an initial level of readiness for students to work in hybrid learning conditions decreased and the number of respondents with high, medium, sufficient levels of readiness increased, unlike the CG.

The statistical criterion $\chi 2$ Pearson was used to confirm the reliability of the experimental data.

## RESULTS AND DISCUSSION

### The content of the studied concept, its difference from the traditional education system and its advantages in higher education.

Hybrid learning in higher education institutions is a relatively new educational process for students in the simultaneous conduct of classes, where students can both attend classes in person and join remotely online (Raes et al., 2019). The term "hybrid learning", as the analysis of various sources shows, is used under different names (blended learning, integrated learning, combined learning) and has several definitions:

- an approach that successfully combines the opportunities provided by the World Wide Web with active classroom work (Dziuban et al., 2018);
- use of offline methods and online methods in communication and learning in a single educational practice to achieve more effective learning outcomes;
- synthesis of traditional and distance communication within the framework of complex educational activities (Kuchai et al., 2017);

- an approach that allows for an accessible and more flexible learning process, where students can use opportunities to gain knowledge and a variety of resources for education, even outside the physical boundaries of higher education;
- a combination of online learning and traditional face-to-face learning, where the educational process is realized in classrooms and outside them, and the online component is a natural extension of traditional classroom learning (Puhach et al., 2021).

From the definitions of hybrid learning in higher education, it is clear that in a general sense, such learning means an innovative approach to learning, where, during classes under the direct supervision of a teacher, part of the cognitive activity of students is conducted, and the other part is conducted using electronic resources in the form of independent work. Depending on the needs of students and the specific educational situation, the ratio between these two parts of the learning process may vary.

The difference between hybrid learning in higher education and the traditional education system is the active use of interactive technologies to access learning material and gain new knowledge. This suggests that technologies are becoming full-fledged learning tools, not just auxiliary ones.

Hybrid learning in higher education involves a combination of different ways of presenting material, different approaches and methods to learning (when students have the opportunity to explore a topic more deeply on their own, part of the material may be intended for independent study, or it may be assigned to group work, where students explore a particular topic or solve problems together).

An important feature of hybrid learning in higher education is that, thanks to the use of electronic platforms and remote learning resources, it is possible to study both at a distance and in the classroom.

Hybrid learning in higher education contributes to a more individualized approach to learning, better development of skills, assimilation of knowledge, and provides students with more opportunities to interact with the material.

Hybrid learning in higher education is characterized by the important role of the teacher in this process of personal development. In this context, teachers act as facilitators of the higher education process, and the main goal is manifested not only in assessing students during exams, but also in monitoring student progress, providing assistance if necessary, and actively interacting with students. That is, teachers are turning into mentors and going beyond the role of mere observers. It is the change in the role of teachers that opens up new opportunities for students in their perception of the education process. With this approach, students can rely on the advice and support of teachers (facilitators) who provide them with the opportunity to explore the material in depth, share their thoughts, discuss issues, promote active learning, and make learning more individualized and interactive (Solodchuk, 2023).

**Guidelines to consider when implementing and developing hybrid learning in higher education.**

Let us identify several important aspects (based on the experience of many higher education institutions) that should be taken into account when implementing and developing hybrid learning in higher education.

1. Choosing a model of hybrid learning in higher education. The choice of an appropriate model of hybrid learning in higher education is of great importance. Depending on the resources and the specifics of the educational process, it is important to choose an approach that includes various combinations of classroom and online classes, and best suits the needs and characteristics of a particular higher education institution.
2. Conduct a needs analysis. A proper analysis of the institution's performance and learning needs is a primary educational task and helps to identify what problems may arise and what learning goals need to be achieved, what resources and support are available. for the successful implementation of hybrid learning in higher education.
3. Encourage teachers to work together. Collaborative work of teachers is important for the transfer of best practices in hybrid learning in higher education, exchange of ideas, and the creation of a network system for the exchange of experience and ideas contributes to the quality of educational activities.
4. Providing training for teaching staff. A key aspect of hybrid learning in higher education is to provide teachers with the opportunity to improve their knowledge and skills necessary for the successful implementation of hybrid learning, which enables teachers to learn to use new methods and technologies, and to improve their teaching skills on an ongoing basis. The training of teaching staff should be focused on achieving high results in education and systematic.
5. Create a support system. In higher education, it is important for teachers and students to create a support system to address technological errors and other difficulties in educational activities that may arise in the process of hybrid learning in higher education. This contributes to successful learning and helps ensure the smooth running of the educational program.

The support system for all participants in the educational process of higher education should be easily accessible and effective (Mytnyk et al., 2024).

Thus, we see that the future belongs to hybrid learning, which can be easily changed in different modes: choose different organizational models, reduce or increase offline or online components, and apply educational strategies according to the needs, opportunities, and challenges. Hybrid learning in higher education is the best practice in the world and is used in innovative educational institutions around the world, as it allows for the development of live communication and the development of individual learning trajectories for each student. Also, the introduction of the hybrid learning model in higher education "raises a number of organizational tasks, the solution of which requires special theoretical research and practical developments to create a system of educational process management (availability of a teacher's workplace with Internet access, the possibility of free access to learning servers via WI-FI) in a mixed form of education (taking into account the time spent by teachers to prepare and conduct online classes, work with students in the mode of communication, using (Romanko, 2020).

**Features of hybrid learning in higher education, factors and components.**

Let us name the main features of hybrid learning in higher education:

- a purposeful process (within certain educational components) of acquiring student competencies, part of which is implemented remotely;
- within the framework of higher education institutions, hybrid learning refers to formal education;
- ICTs are used to organize learning interaction (discussion, consultations), implement control measures, deliver and store learning material;
- ICTs and TEL are used to study the educational component (mobile phones, PCs, projectors, tablets);
- self-control of higher education students in terms of place, time, and pace of study.

In hybrid learning, the methodological work of the teacher includes two components.

1. The main components of practical training are:

- preliminary control of skills, knowledge, abilities of higher education students;
- formulation and discussion by the teacher with the participation of higher education students of the general problem of research;
- performing tasks with their discussion by higher education students; – solving and checking control tasks by higher education students;
- monitoring of higher education students.

2. The grades (in points) received by the applicant for individual practical classes are taken into account in this educational component (discipline) when setting the final grade. A large-scale change in the educational process can be the result of hybrid learning with a specific task: "improving overall academic performance or digital literacy; automating audience assessment; improving teaching methods for certain disciplines, developing students' communication competencies" (Buhaichuk, 2016).

Hybrid learning is considered an innovative technology that has significant advantages over traditional forms of work and meets the following criteria:

1. independent work of higher education applicants, which includes various types of activities (webquests, search tasks on the Internet, etc.) without the help of a teacher;
2. direct learning in the form of traditional classroom lessons with personal contact between teachers and students;
3. electronic collaborative learning, which involves participation in online conferences, webinars, and completing various tasks on the Internet.

The traditional presentation of material differs significantly from hybrid learning in higher education

- the ability to choose the optimal pace of presentation of material;
- the ability to vary the quantitative ratio of the components of the educational process;
- by assigning certain types of tasks or topics for independent study – saving time;
- introducing various forms of organizing innovative professional training of future specialists;
- through the use of Internet resources – the possibility of constant access of higher education students to educational material;
- individualization of the learning process.

Hybrid learning in higher education is a complex system that provides interactive interaction between a teacher and a student on the Internet and incorporates the best experience of traditional teaching methods.

In combination with live contact of the teacher with the group, it is the flexibility of e-learning in the classroom during the lesson that leads to the efficiency and convenience of students' mastery of professional knowledge. In hybrid learning in higher education, traditional and electronic forms of the educational process should go in parallel: each section passed in the lesson should correspond to a block of tasks in open access. It is the electronic course of study that supplements the main lessons, which should

be those that are not included in the electronic textbook (main or paper) – exercises of various levels of complexity, simulators, tests, reference materials. Test tasks to consolidate the material will allow saving classroom time, simulators form the ability of students to apply knowledge in practice, and work in the mode of individual viewing with video files will help in detailed analysis of the material by choosing an individual pace of learning. It may contain an electronic course and other types of work, the implementation of which is carried out via audio, video conferences, chats, e-mail, etc.

By transferring part of the classes to the electronic environment, hybrid learning involves reducing the number of classroom classes.

The ratio of electronic, virtual and traditional classroom components may differ and depend on the following factors: the age of higher education applicants, the subject area, the technical infrastructure for conducting training, the level of training of higher education applicants.

The content of hybrid learning consists of components: independent work of higher education applicants in the electronic environment; traditional classroom classes; online conferences, group e-learning (Bevzo, 2021).

The content of the main models of hybrid learning that have become widespread in the educational process of higher education.

Let's reveal the content of the main models that have become widespread in the educational process of higher education.

The "Flex" model. With the help of the "Flex" hybrid learning model in higher education, most of the curriculum is transferred online. The teacher acts as a consultant, is a tutor, coordinator, organizer of the educational process in higher education, advises higher education applicants on the implementation of a certain group of tasks, answers questions that are difficult for students, conducts consultations that can be individual and group.

The "Face-to-Face Driver" model of hybrid learning in higher education provides teaching based on direct interaction between the teacher and the student, in the form of traditional learning provides for the study of a large volume of the curriculum. As an additional in-depth study of the material, work with electronic resources is implemented. Only strong students are involved in this form of work, who can independently complete the task posted in the open access.

The "OnlineLab" model of hybrid learning in higher education provides conditions for mastering the curriculum, the educational process takes place under the conditions of e-learning, which is carried out in specially equipped classrooms. Practical or theoretical material, tests, tasks are posted on closed or open websites of the structural unit. Training can also take place in a traditional form. This model is used at the initial stage of the educational process in order to conduct classroom lessons that require practical application.

The "StationRotation" model of hybrid learning in higher education is based on the alternation of indirect interaction of participants in the learning process and personal, direct training of a student (group of students) and a teacher using information technologies.

The "Self-Blend" model. The features of the "Self-Blend" hybrid learning model in higher education are the ability of students to choose in-depth, additional courses to the main training. Students should strive to master the specialty at a higher level, be motivated to be competitive.

The hybrid learning model "OnlineDriver" provides an opportunity for mobile students to master topics or entire courses that do not have enough free time for classroom learning. Using electronic resources, this model involves studying the material, using online or face-to-face consultations.

The choice of a hybrid learning model depends on the conditions and goals of learning, on the situation, motivation and level of knowledge of students, therefore all of the above hybrid learning models are rarely used in their "pure" form. Each model involves the development of technical capabilities and resources, didactic goals, application scenario, functionality, distribution of roles (Bidenko & Kyseliova, 2018).

The model of «flipped learning». Hybrid learning includes distance and classroom forms of learning (communication in a «virtual classroom» in a lesson that combines a forum and a chat) with subsequent completion of tests, passing exams, practical exercises, writing a project; full-time and part-time (part-time without communication with a teacher); day and evening.

In modern higher education, the use of the «flipped learning» model as a component of hybrid learning is relevant. This is a model of hybrid learning technology, where the role of the teacher is reduced to that of a tutor, in which the organization of the educational process involves E-Learning and the use of individualized, the student, relying on his own experience, takes responsibility for self-control and self-education, explanations by the teacher and online communication. Such technology requires the skill of the teacher, a flexible approach to the educational process, the readiness to use it by all subjects of learning, differentiated and individual approaches, consistency

and logic. This learning cannot be called distance learning, because face-to-face work in the classroom remains, only its content changes. Let's name the features of the "flipped learning" model:

- alternative in education: mastering knowledge is collective, replaced by a more creative, dynamic, individual approach, simultaneity replaces asynchrony;
- combined learning (divided into parts: acquiring practical skills, consolidating what has been learned, which occurs in person and independent distance mastering of knowledge, preparation for perception);
- non-standard communication, because it is carried out at a convenient time and outside the classroom, through the use of a methodological network for all subjects of activity of the resource "Zoom", e-mail, chat, etc.;
- change in the role of the teacher (the teacher is a manager, the organizer is an assistant, and the student is a subject with the right to choose);
- use of podcasts and vodcasts;
- the possibility of re-viewing the material;
- students take responsibility for education;
- a structured presentation of theory is additional, not the main task;
- interaction in the practical plane between the teacher and the student;
- the principle of student-centeredness;
- flexibility (Nazarenko, 2020).

Therefore, hybrid learning can be used to solve significant problems of participants in the educational process:

- thanks to the use of hybrid learning, higher education institutions can enroll more students and compensate for insufficient classroom capacity;
- for teachers, hybrid learning in the form of blended courses can be a way to use innovative technologies, new opportunities for improving professional competence and pedagogical skills, by transitioning to distance learning;
- for students, hybrid learning offers the advantages of online learning with the practice of social and educational interaction (Knysh et al., 2024).

The hybrid learning form places high demands on the level of professionalism of teachers, shifting the main emphasis from administrative tasks to work with databases and traditional organization of the educational process and support for students and provision of individualized assistance, to comprehensive and systematic improvement of curricula, to solving problems of supporting the learning process, stimulation, motivation by adding to traditional learning such online components as online discussions, discussion of problematic issues, blogs, completing tasks in electronic form, surveys, etc. Adaptive curricula therefore allow each student to study at a pace and mode convenient for him/her and to receive differentiated instructions (Vyshkivska et al., 2022).

Results of an experimental study.

In order to prove the importance and innovativeness of hybrid learning in the educational sector, we have developed an experimental program for organizing the study, which includes two stages of the experiment: ascertaining and formative.

During 2022-2023, experimental work was carried out. Master's students of sociological specialties were involved in it.

The results of the ascertaining stage of the experiment showed that the state of preparation of students for higher education was approximately at the same level in the EG and CG, where minor educational and scientific activities were used in the conditions of open distance courses at universities.

At the formative stage of the experiment, a methodology for preparing masters was introduced through the use of hybrid learning in the educational and scientific activities of students, based on the principles of using mass courses and open education. The basis of mass open hybrid learning in the educational and scientific activities of students is an integrated basis that ensures the consideration of individual capabilities of master's students and their flexible adaptation to the process of hybrid learning during the educational and scientific activities of students.

As a result of the study, low, medium, sufficient and high levels of readiness of master's students for education through the use of hybrid learning in the educational and scientific activities of students were identified and described.

With the effective implementation of the author's methodology for training master's students through the use of hybrid learning in the educational and scientific activities of students, it was proven that its implementation provides future specialists with master's knowledge of the forms and methods of organizing hybrid learning, scientific research activities, in-depth knowledge of the main categories of research, and methods of reforming education.

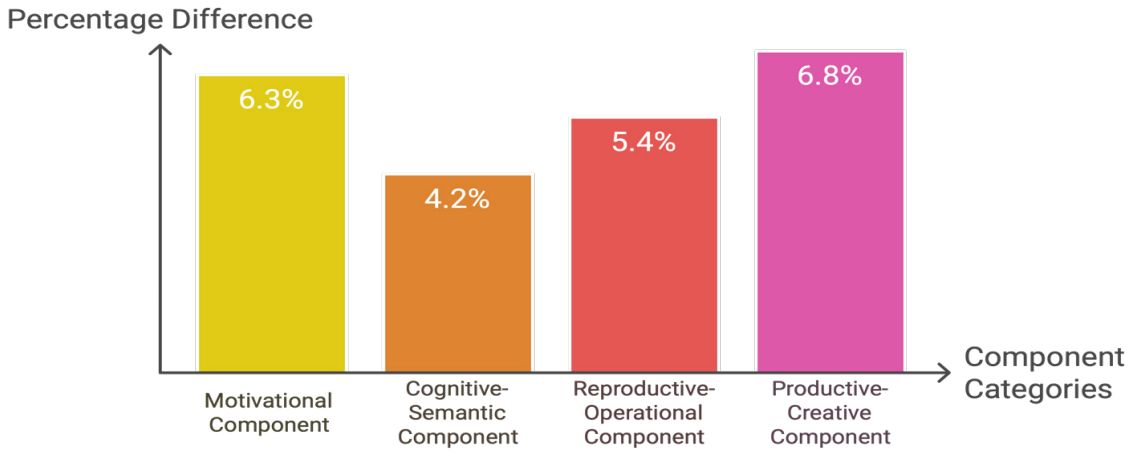
In the EG, the number of master's students was 27 people, and in the EG – 26 people. We used the $\phi^*$- Fisher's criterion to check the homogeneity of the distribution into

groups. The empirical value ϕ*emp = 0.087 was obtained as a result of calculations. Within 2.31; +∞ there is a zone of significance, and within – ∞; 1.64 – a zone of insignificance.

The difference is not significant between the percentages of the samples, respectively, the groups are uniformly distributed. The comparison of the levels of readiness of masters to use hybrid learning in students' activities was carried out at the end of the last academic semester, which involved an analysis of the quality of theoretical training, motivation indicators, the level of formation of students' work skills in hybrid learning conditions and was carried out by comparing the results of the formation of students' work skills in hybrid learning conditions of masters of the CG and EG groups for each structural component.

The results of the pedagogical experiment showed that at a high level: the indicators of the motivational component in the EG are 6.3% higher at a high level than in the control groups; The indicators of the cognitive-semantic component in the EG are 4.2% higher than in the control groups; the indicators of the reproductive-operational component in the EG are 5.4% higher than in the control groups; the indicators of the productive-creative component are 6.8% higher than in the control groups (Figure 1).

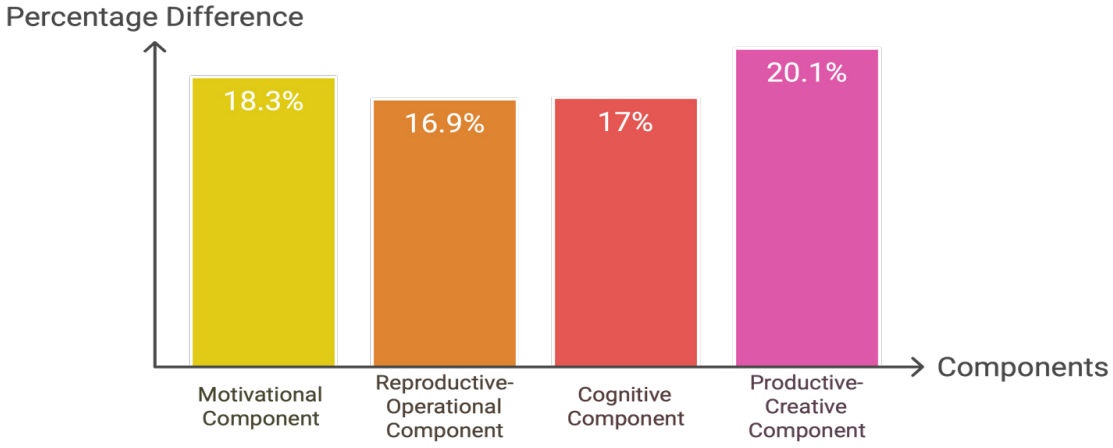
Fig 1: Comparison of Component Indicators in Experimental and Control Groups




Source: developed by the authors

The indicators of the motivational component in the EG are at a sufficient level higher than in the CG by 18.3%, the reproductive-operational component is higher than in the CG by 16.9%, the cognitive component is higher than in the CG by 17%, the productive-creative component is higher than in the CG by 20.1% (Figure 2).

Fig 2: Comparison of Component Levels in Experimental and Control Groups




Source: developed by the authors



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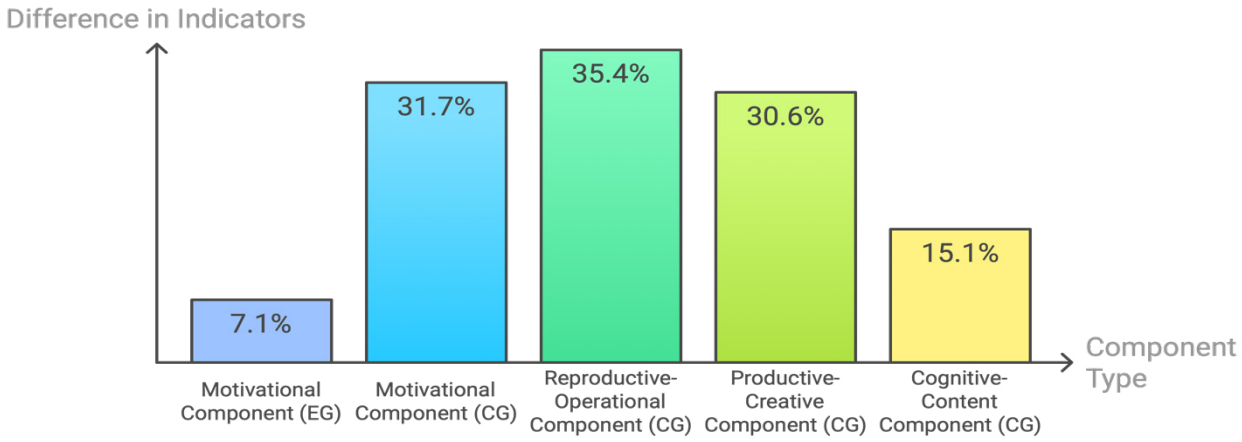
The indicators of the motivational component in the EG at the average level are higher than in the CG by 7.1%. It should be noted that the indicators of the initial level have decreased in the EG.

In the CG at the initial level, the indicators of the motivational component are higher than in the EG by 31.7%, the indicators of the reproductive-operational component are higher by 35.4%, the indicators of the productive-creative component are higher by 30.6%, the indicators of the cognitive-content component are higher by 15.1%. The results of the study showed that in the EG, during the period of the experimental study, the number of respondents with an initial level of readiness for student work in hybrid learning conditions decreased and increased with high, medium, sufficient levels of readiness, in contrast to the CG (Figure 3).

Fig 3: Comparison of Component Indicators Between Groups




Source: developed by the authors

According to the Pearson $\chi 2$ statistical criterion, the reliability of the experimental data was confirmed. The implemented methodology for training masters through the use of hybrid learning in the educational and scientific activities of students is effective precisely in expanding the opportunities for learning and self-development of the future specialist's personality, which was proven by the increase in indicators in the experimental groups. Thus, the modern information space forms self-confidence and their capabilities, opens up ways for master's students to increase and deepen the level of knowledge. Future specialists through the use of hybrid learning in educational and scientific activities, having a high level of readiness for professional activity, are able to apply the acquired knowledge and practical and technological skills in practical activities, to design their own development throughout life. They are characterized by the ability to use hybrid learning in scientific and professional activities, multimedia design of professional work, non-standard in solving problems.

It is proven that the intensity of learning material in experimental groups through the use of hybrid learning in students' educational and scientific activities provides wide access to electronic information, the possibility of educational content of a mass open distance course, the use of video lectures, information and methodological tools. The study showed that the use of hybrid learning in students' educational and scientific activities contributes to the systematic use by teachers of various teaching aids, methods, forms of the educational process and control and monitoring of activities; is characterized by significant didactic potential that activates the educational and cognitive activities of future specialists; contributes to the enrichment of skills and knowledge regarding the application of open education elements in professional activities, expands the idea of self-improvement, the possibilities of self-education; within open platforms, promotes the exchange of experience, preparation for professional activities through the use of electronic educational content.

The results of the experimental study confirm that the author's methodology for training masters through the use of hybrid learning in the educational and scientific activities of students, based on the principles of using mass courses,

open education, etc., provides an opportunity to combine training in mass open distance courses and the educational process in the classroom.

**Recommendations for the effective implementation of hybrid learning in the educational activities of students in higher education:**

1. when training specialists, there should be a clear agreement on the understanding and definition of mixing options and hybrid learning models by teachers participating in the educational process of higher education;
2. to ensure hybrid learning, it is necessary to justify the choice and determine information and communication technologies, it is advisable to use unified software;
3. 3 a strategy for the implementation and implementation of hybrid learning in a higher education institution should be determined;
4. the developed materials for hybrid learning should include various tools and interactive elements for monitoring learning outcomes, and should be of high quality;
5. students should be informed of clearly defined requirements for recording results, learning, and conditions for final control;
6. educational materials should be constantly updated and revised, taking into account new achievements in technology and science and feedback from students;
7. there should be transparent and systematic monitoring of the learning process and notification of higher education applicants about the results of their assessment;
8. with the help of various information and communication technologies, communication between students and teachers in hybrid learning should be especially well-tuned (social networks, forums, chats, instant messaging systems).

Therefore, when training specialists in higher education, a clear model of hybrid learning for training specialists should be determined, and a methodology for its application should be developed, taking into account the level of information and communication competence of students and teachers, the resource provision of the educational institution, and the conditions for implementing the educational process using this methodology.

Based on the generalization of the research results, we formulated a conclusion.

## CONCLUSIONES

So, nowadays, innovative technologies are actively transforming education, their influence is constantly growing. The development of a hybrid form of learning for the modernization of the entire educational sphere is one of the key directions that combines the advantages of interactive and traditional learning, since the variants of hybrid learning models make the educational process more flexible and enable the teacher to adapt it to individual educational trajectories created by students, contributing to the development of their key competencies and skills.

The article analyzes the content of the concept under study, shows the difference from the traditional education system and the advantages of hybrid learning in higher education. Methodological advice is given that should be taken into account when implementing and developing hybrid learning in higher education., identifies the features of hybrid learning in higher education, its factors and components. The content of the main hybrid learning models that have become widespread in the educational process of higher education is analyzed in detail.

In order to prove the importance and innovativeness of hybrid learning in the educational sector, an experimental program was developed to organize the study, which includes two stages of the experiment: ascertaining and formative.

During 2022-2023, experimental work was carried out. Master's students of socionomic specialties were involved in it.

The results of the ascertaining stage of the experiment showed that the state of training of specialists in higher education was approximately at the same level in EG and CG, where minor educational and scientific activities were used in the conditions of open distance courses at universities.

At the formative stage of the experiment, a methodology for training masters was introduced through the use of hybrid learning in the educational and scientific activities of students, based on the principles of using mass courses and open education. As a result of the study, low, medium, sufficient and high levels of readiness of masters for education through the use of hybrid learning in the educational and scientific activities of students were identified and described.

In the EG, the number of undergraduates was 27 people, and in the EG – 26 people. We used Fisher's **ϕ***- test to check the homogeneity of the distribution into groups. The difference is not significant between the percentages of the samples, respectively, the groups are homogeneously distributed.

The results of the study showed that in the EG, during the period of the experimental study, the number of

respondents with an initial level of readiness for student work in hybrid learning conditions decreased and increased with high, medium, sufficient levels of readiness, unlike the CG.

The reliability of the experimental data was confirmed using the Pearson $\chi 2$ statistical criterion. Recommendations were developed for the effective implementation of hybrid learning in the educational activities of students in higher education.

We consider the development of regulatory requirements for the hybrid learning model for the organization of the educational process of higher education to be prospects for further scientific research; development of organizational and methodological conditions for the implementation of hybrid learning in the educational process of higher education; clarifying, with the aim of implementing in higher education, leading global trends and foreign experience in hybrid learning to identify successful practices.

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