Innovative elements in distance learning in a multicultural environment

Innovaciones científicas y tecnologías avanzadas en un entorno multicultural durante la formación a distancia

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Abstract

Scientific and technological innovations in education actually complete the process of establishing distance learning as an independent educational format. Information and digital cluster forms specific educational components in different socio-cultural dimensions, one of which is multiculturalism. Scientific exploration aims to analyze the dynamics of the implementation of scientific and technological innovations in the multicultural educational environment through the actualization of distance learning. The objectives are to investigate the transformation of educational strategies of multicultural space, which are updated online thanks to the ICT-potential. The article uses general scientific, pedagogical, culturological, and philosophical methods of research. We see a characteristic feature of the study as methodological activity in the dynamics of the rapid socio-cultural development of modern education. Consequently, modern sociocultural space is characterized by diversity, which dictates education its development prospects, which are

Resumen

Las innovaciones científicas y tecnológicas en la educación completan realmente el proceso de establecimiento de la enseñanza a distancia como formato educativo independiente. La información y la agrupación digital forman componentes educativos específicos en diferentes dimensiones socioculturales, una de las cuales es el multiculturalismo. El objetivo de la exploración científica es analizar la dinámica de la implementación de las innovaciones científicas y tecnológicas en el entorno educativo multicultural a través de la actualización del aprendizaje a distancia. Los objetivos son investigar la transformación de las estrategias educativas del espacio multicultural, que se actualizan en línea gracias al potencial de las TIC. El artículo utiliza métodos generales de investigación científica, pedagógica, culturológica y filosófica. Vemos un rasgo característico del estudio como actividad metodológica en la dinámica del rápido desarrollo sociocultural de la educación moderna. En consecuencia, el espacio sociocultural moderno se caracteriza por la diversidad, que dicta a la

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provided by scientific innovations and advanced technologies. Prospective areas of research are the direction of innovative dimensions to overcome the negative manifestations of distance learning and taking into account the multicultural nature of the educational environment.

Keywords: distance learning, ICT in education, innovative educational strategies, multicultural space, Moodle.

educación sus perspectivas de desarrollo, que son proporcionadas por las innovaciones científicas y las tecnologías avanzadas. Las áreas prospectivas de investigación son la dirección de las dimensiones innovadoras para superar las manifestaciones negativas de la educación a distancia y teniendo en cuenta el carácter multicultural del entorno educativo.

Palabras clave: aprendizaje a distancia, TIC en la educación, estrategias educativas innovadoras, espacio multicultural, Moodle.

Introduction

Distance learning has gradually asserted itself in educational systems. With the development of information and digital technologies, the organizational and logistical opportunities for the distance learning format of the educational process have increased significantly. At the same time, the globalization processes at the turn of the XX-XXI centuries contributed to the emergence of the factor of demand for distance learning for the multicultural environment. Synergetic scientific and worldview paradigm focused on pragmatism, the main principle of which was the result. The need for rapid and productive learning emerged to achieve proper educational outcomes. Applicants for knowledge, skills, and abilities in recent years have not always been in the standard conditions of education applicants in traditional educational institutions. Often enough, learning content had to be distributed to a large and dispersed audience that was in different locations and in different sociocultural statuses. This state of affairs required distance learning, which is able to take into account the necessary parameters required to organize the educational process in a multicultural space.

The traditional model of education, based on conservative principles, is quite difficult to respond to the need to transform. However, the modern world is full of challenges that have a significant impact on the content and form of education. If the content of education can be relatively quietly changed to meet the demands of the time, the transformation of the format of education requires much more effort. Today we are witnessing the final stage of the formation of a new format in the educational system - the online electronic educational space.

The period of positioning the distance learning format as an alternative or innovative has already expired. Recent years, especially the times of pandemic restrictions, have formed the basis for reorienting the innovativeness of learning

technologies to the basic use of them in the educational space. In contemporary pedagogical discourse, the problem of distance learning focuses on considering aspects of creating a sustainable online environment for educators and co-educators (Ovcharuk, 2020; Sherman, Puhovskiy, Kambalova, & Kdyrova, 2022). A sustainable educational environment implies a total perception of the format of learning activity by all subjects of education. This is how the conditions for a stable and balanced educational process are created. We must recognize that online learning differs from emergency distance learning because it is more sustainable and holistic (Adedoyin & Soykan, 2020).

In such an environment, it is possible to plan short- and long-term educational strategies. However, an important methodological prerequisite for such planning is an algorithm for harnessing scientific innovation and technological transformation in education. As Penprase (2018) notes, "societal change from 4IR will require higher education to develop a greater capacity for ethical and intercultural understanding, preferring a liberal arts education with modifications to adapt to the specific issues raising 4IR technologies."

The purpose of the scientific exploration is to analyze the implementation of scientific and technological innovations in the distance education environment in the context of the dynamic development of multicultural space. The objectives are to form the attitudes of adaptation of transformational educational systems (distance, electronic, digital), which in the multicultural dimension need improvement in online.

Theoretical Framework or Literature Review

Modern scientific and pedagogical literature has attempted to systematize e-learning trends over

the past decade (Valverde-Berrocoso et al., 2020). At the same time, it should be noted that the specificity of distance learning in the literature is positioned in two dimensions: pre-pandemic (before 2020) and pandemic (from 2020).

In the pre-pandemic period, the status of the distance learning format was alternative to the traditional educational dimensions. The main pedagogical research was directed to the general problems of multiculturalism of the educational environment (Parkhouse et al., 2019), an adaptation of educational process participants to globalization manifestations in education (Karacabey et al., 2019), formation of ICT competencies in the subjects of the educational system (Ovcharuk, 2020).

Consideration of distance learning as the main format of the educational process has been expressed in the scientific and pedagogical discourse in such aspects:

- the potential of online learning in multicultural environments (Adedoyin & Soykan, 2020);
- synergetic self-organizing distance learning models (Choi & Lee, 2020);
- practically oriented science and technology innovations in online learning (Korkmaz & Toraman, 2020);
- indicators of educational quality in a distance learning format (Lassoued et al, 2020);
- ICT competencies in e-learning (Sousa & Rocha, 2019);
- sociocultural characteristics of the global use of distance learning (Rodriguez & Morrison, 2019).

The impact of the COVID-19 pandemic on the educational system was considered in the context of the mainstreaming of ICT-based learning (Coman et al., 2020), taking into account the sociocultural status of participants in the educational process (Hebebci et al, 2020).

Methodology

The methodological precepts of distance learning research in a multicultural world need a critical analysis of the planetary turn to digital distance and distance education (Williamson et al., 2020). Among the methodological approaches, we note the use of dichotomous studies of the impact of multiculturalism on the process of distance learning: analysis of the international (interstate) educational space vs. the features of the national

educational environment (Ferri et al., 2020). Certain aspects of distance learning features are analyzed using the technique of content analysis (Hebebci et al., 2020).

The most common method of researching the problem of distance learning is an exploratory descriptive approach using a questionnaire with appropriate samples (Lassoued et al., 2020). In our research exploration, we offer an analysis of the activity of distance learning systems among applicants and educators. An interesting site for the study of distance learning innovations in the multicultural dimension in Ukraine are institutions with applicants from different nationalities. The activity of applicants of different nationalities has formed a number of statistical data, which became the basis for the study of the multicultural influence on the transformational processes of distance learning.

The information-digital dimension adds its share of methodological potential when studying the impact of innovativeness on the multicultural educational space and the distance mode of the educational process. In particular, let us note the possibility of conducting an online survey in the distance mode (Sousa & Rocha, 2019).

Results and Discussion

The peculiarity of the final approval of distance learning in the educational space was the lightning speed with which all educational institutions switched exclusively to this format of work organization. Pandemic constraints dictated the conditions for the further functioning of the educational system as a whole, so there was no special choice for the educational community. In a short period of time, there was actually a real-time adaptation exclusively to online learning (Coman et al., 2020). On the one hand, the lack of a planned transition to the distance format has led to a certain chaotic nature of the learning process. However, on the other hand, such a stress test of the education system has demonstrated its potential to respond even to global problems. The realization of its powerful fundamental potential contributed to the formation of a worldview educational paradigm focused on continuous progress and development.

When we consider the established educational worldview paradigm, it should be understood that such a system has answers to the vast majority of questions of the multicultural dimension of education. The scientific and technological component in the established

worldview paradigm works according to the principle: innovation for improvement (Tambovceva, 2021). That is, when an educational problem of any nature arises (including a multicultural one), the scientific and technological segment mobilizes its efforts to solve it quickly and efficiently. The formation of ICT competencies is a relevant educational niche for multicultural space (Qizi, 2021). The availability and transmission of necessary cultural information is a prerequisite for the development of any community. Therefore, the educational cluster activates all possible mechanisms to form a common worldview paradigm in which multiculturalism is taken for granted.

Teachers' participation in cultural exchange programs in courses can be useful to increase their awareness and competence in multicultural education (Karacabey et al., 2019). In such an environment, the electronic format allows for cultural learning without wasting resources. Intercultural communication is optimized by advances in science and technology.

In general, the fundamental condition for controlling the quality of higher education is information support, which includes the formation of educational information and its processing, characterizing the state of the educational system (Oseredchuk et al., 2022). The issue of education quality largely depends on the quantitative indicators of scientific and technological potential and its ability to implement in a multicultural environment.

One of the important trends in modern progressive education is the concept of active learning, which characterizes not only the didactic approach but also forms a holistic philosophical and attitudinal paradigm. The key message of this paradigm is the actualization of global educational transformation as a synergetic model of interaction between subjects of education, educational groups or institutions, and national education systems. The search for learning contexts is the main goal of educational innovation (Misseyanni et al., 2018). Active

learning, due to the synergistic effects of interdisciplinarity and self-organization, brings together the stakeholders of the educational space and brings the educational system's teaching and methodological and organizational, and logistical cluster to a common denominator.

Such theoretical and methodological precepts become a favorable environment for multicultural dimensions of the educational space. The presence of several cultural manifestations in the educational system needs a dynamic system of education. The system of online learning was able to promptly provide all the necessary conditions for the subjects of the educational system.

Given the role of distance learning in modern education, we can state the globality of this format of learning (Palvia et al., 2018). In such conditions, this system of educational process organization covers all socio-cultural communities. Not to mention, innovativeness and adoption of advanced technologies in distance learning system occurs unevenly. Progressive communities with a high level of logistical support have much more opportunities for scientific innovation in the information and digital cluster. Multicultural space implies a peculiar blurring of boundaries in two aspects:

- the ability of the applicant to choose a country or community where the information and digital innovation potential is at an adequate level;
- the opportunity to disseminate information and digital technologies among communities with different levels of development.

The affirmation of distance learning as a basic format of the educational process has led to the time to focus on the intricacies of e-learning (Liu et al., 2019). Among the most common issues in contemporary scientific and pedagogical discourse related to distance learning, we note the following aspects (see Fig. 1).
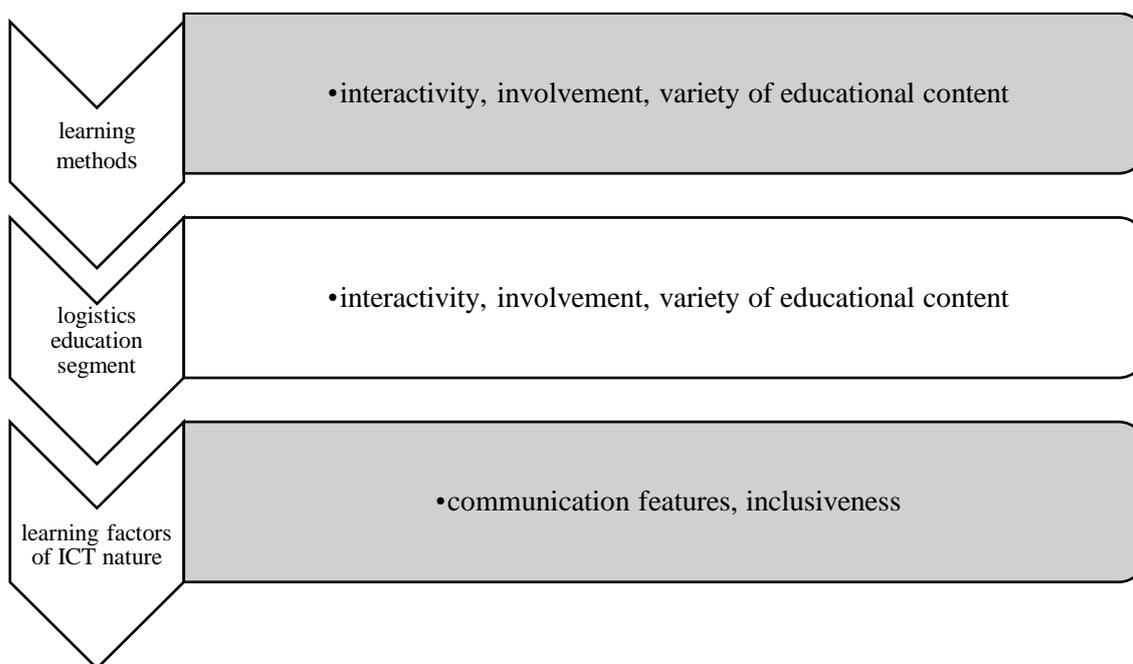
Fig. 1. Actual aspects of distance learning functioning in the multicultural space.
Source: authors' own development.

These elements of distance learning need constant updating and improvement since multiculturalism implies involvement in the educational process of the full power of scientific and technological potential.

Having succeeded in putting in order the organizational and logistical elements of online learning, the process of constant updating of this format of learning has begun. The analogy here analogy with the software of modern information and digital technologies Online learning also requires constant updating and improvement at all levels. Consequently, when we talk about advanced technologies in online learning, we are referring to the process of updating, not the introduction of a new format of distance learning.

When we consider distance learning, an important point is to investigate the type of presence of education applicants and educators (social or cognitive) (Rapanta et al., 2020).

Modern distance learning systems provide advanced statistics on user activity. Our study was guided by an analysis of a multicultural audience of education applicants consisting of students from different continents, different states, and different cultural communities. The different cultural paradigms of the applicants became one of the focuses of the study in the context of the perception of distance learning in general and the response to scientific and technological innovations of online learning.

As an example, let us cite the statistics on the use of resources of the Moodle environment (the largest distance learning platform in the world of education), indicating the steady dynamics of increasing requests from education applicants for access to learning content. When we talk about the dynamics of mastering the latest versions of the Moodle distance learning format, we get the following indicators (see Fig. 2).

Active versions of Moodle

- Versions 3.1 - 4.0 96% 96   ■ Versions 3.0 and lower   ■   ▮
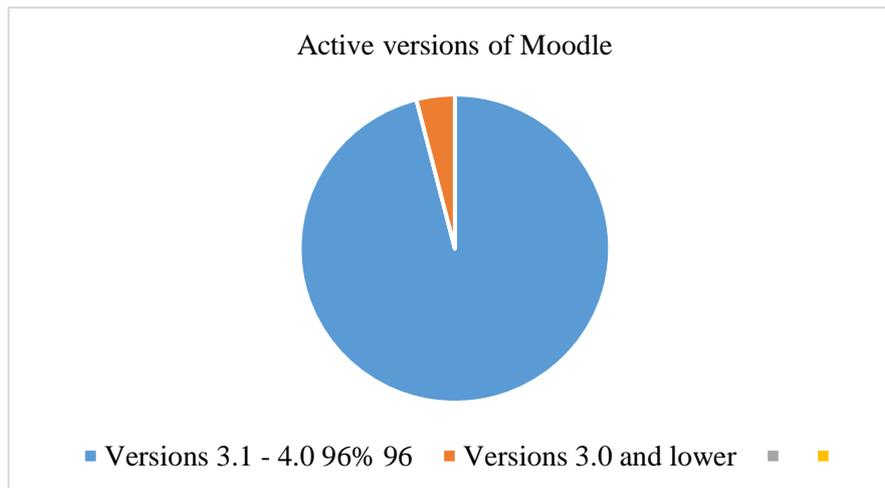
Fig. 2. Versions of the Moodle LMS used by the subjects of the educational process as of 2018
Source: (Moodle, n/d)

As we can see, new versions of Moodle distance learning system have a total superior demand among educational institutions. We can state that the attraction to scientific and technological innovations is total and does not depend on the characteristics of the socio-cultural community. Consequently, we can conclude that the multicultural environment adapts to distance learning at virtually the same pace. This indicates the priority of the educational component over the socio-cultural one. Educational needs dictate the conditions of sociocultural space, and not vice versa, as often happened in previous eras.

This sociocultural reality forms predisposing factors for the continuation and development of the processes of scientific and technological improvement of distance learning independent of multicultural environments.

One of the main priorities of educational development is to create a diverse environment for participants in the educational process (Tarbutton, 2018). The discussion of technology integration practices in the process of creating a positive learning space is becoming mainstream in contemporary scientific and pedagogical discourse. Multiculturalism is one of the key constants considered in twentieth-century educational distance learning practices. At the same time, the electronic online learning format is a flexible tool, thanks to which the obstacles of multicultural nature are overcome, namely:

- accessibility of education regardless of the socio-cultural status of the subject of the educational system;
- diversity of education, taking into account the socio-cultural characteristics of its participants;

- tolerance to the peculiarities of representatives of different socio-cultural communities.

A group of researchers (Morales-Chicas et al., 2019) attempted to identify culturally responsive educational strategies (CRE) within a K-12 computer-based education that addressed issues of multiculturalism (social and political consciousness, popular culture, cultural artifacts, intercultural connections, personalization issues, and experiences in education. Technological education that uses the information and digital component is able to effectively provide appropriate learning content (including socio-cultural direction) to all participants in the educational process.

Rodriguez & Morrison (2019) argue that science and technology innovation in education demonstrates the prioritization of the sociocultural triad (equity, diversity, inclusion) over traditional political-economic arguments. Distance learning is a mechanism for relieving tensions in individual multicultural dimensions regarding the translation of specific cultural knowledge about communities (Parkhouse et al., 2019). The need for self-organization of participants in the educational process during online learning encourages the formation of autonomous worldview beliefs about cultural issues. This approach completely removes the problem of any pressure or redundancy of ideological instruction from the tutor or dominant sociocultural group in the classroom learning format.

An important step for introducing innovative elements into the educational process is the development of educators' self-efficacy in the use

of multicultural classrooms (TSMC). This format forms the basis for the development of multicultural (PDME) (Choi & Lee, 2020). Such innovative approaches of a sociocultural nature are a promising direction of renewal of the educational system by achieving a synergetic effect in education and culture.

The obvious advantage of distance learning in the multicultural dimension is synergistic methodological attitudes. Different sociocultural dimensions need interdisciplinarity and self-organizing principles. Among co-educators of education, these aspects are expressed in the elements of self-regulation (Rasheed et al., 2020). They are realized in distance learning systems through an ongoing process of transformation based on the information-technological potential.

Conclusions

Thus, multiculturalism in distance learning is manifested in the aspect of analyzing the response of different communities (national, ethnic, cultural, religious, etc.) to innovative processes in education. The level of scientific and technological progress in the modern educational system allows to form educational strategies by the following components:

- Ensuring the dynamism of education and its readiness for global challenges;
- Taking into account the socio-cultural specificity of the subjects of the educational process;
- Adaptation of distance and digital learning to the parameters of educational quality.

Modern socio-cultural space is characterized by dynamic changes, pragmatic principles, and socio-cultural diversity and forms appropriate educational development strategies. To ensure the progress of education under such conditions is possible only through scientific innovations and advanced technologies, designed to correlate the format of distance learning with the peculiarities of the multicultural world for the subjects of the educational space.

Of course, distance learning, as, after all, any other problem of pedagogical discourse, produces a number of problematic aspects waiting to be solved. Today distance learning format is under the euphoria of its effectiveness in the critical period for the education pandemic. However, already the near future actualizes the need to solve the problems of e-learning or online learning. Consequently, the prospects of the study lie in the direction of scientific innovation and advanced technology to overcome the potentially negative manifestations of distance learning in a multicultural environment.

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