Región Científica

e-ISSN: 2954-6168
Región Científica. 2023. 2(1), 202358
doi: 10.58763/rc202358

Systemic vision of the technological educational context in Latin America

Visión sistémica del contexto educativo tecnológico en Latinoamérica

Iris Jiménez-Pitre[1], Geomar Molina-Bolívar[1], Rodrigo Gámez Pitre[1]

ABSTRACT

The research aimed to diagnose the reality of Latin America in the technological educational context, from the perspectives of different international organizations. A documentary and interpretive study was designed using discursive hermeneutics to detect the similarities and differences found in the pronouncements made by these organizations; about the use and appropriation of pedagogical solutions based on digital technologies that are fundamental in the countries of this region to guarantee a comprehensive education in accordance with these globalized and post-pandemic times. The international entities selected for analysis, and which served as a reference sample for this diagnosis, were: the World Bank (WB); the Economic Commission for Latin America and the Caribbean (ECLAC); the United Nations Organization for Education, Science and Culture (UNESCO) and the Organization for Economic Cooperation and Development (OECD). The diagnosis was oriented towards the perception that these organizations have of the current reality and the solutions offered to solve the obstacles in the face of these realities. The results show discursive disparities regarding the existing technological-educational situation, as well as coincidences related to the aspects proposed to remedy these obstacles. It was concluded that the support received by these organizations around technology-based education in Latin American countries, should not be biased by the interests of the global economy that limit the autonomy of these people.

Keywords: alternative education, information technology, educational technology.

JEL Classification: I20; I23.

RESUMEN

La investigación tuvo como objetivo diagnosticar la realidad de Latinoamérica en el contexto tecnológico educativo, desde las perspectivas de distintos organismos internacionales. Se diseñó un estudio documental e interpretativo que utilizó la hermenéutica discursiva para detectar las coincidencias y diferencias encontradas en las alocuciones emitidas por estos organismos; sobre el uso y apropiación de las soluciones pedagógicas basadas en tecnologías digitales que resultan fundamentales en los países de esta región para garantizar una educación integral y acorde con estos tiempos globalizados y de postpandemia. Los entes internacionales seleccionadas para el análisis, y que sirvieron de muestra referencial para este diagnóstico estuvieron constituidos por: el Banco Mundial (BM); la Comisión Económica para América Latina y el Caribe (CEPAL); la Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura (UNESCO) y la Organización de Cooperación y Desarrollo Económico (OCDE). El diagnostico se orientó hacia la percepción que tienen estos organismos de la realidad actual y las soluciones ofrecidas para solventar los obstáculos ante dichas realidades. Los resultados arrojados muestran disparidades discursivas en cuanto a la situación tecnológico-educativa existente, así como también coincidencias en lo relacionado a los aspectos propuestos para remediar estos obstáculos. Se concluyó que el apoyo recibido por estos organismos en torno a la educación basada en la tecnología en los países latinoamericanos, no debe estar sesgada por los intereses de la economía global que limita la autonomía de estos pueblos.

Palabras clave: educación alternativa, tecnología de la información, tecnología educacional.

Clasificación JEL: I20; I23.

Received: 08-11-2022 **Revised:** 13-12-2022 **Accepted:** 15-12-2022 **Published:** 13-01-2023

Editor: Carlos Alberto Gómez Cano

[1]Universidad de La Guajira. Riohacha, Colombia

Cite as: Jiménez-Pitre, I., Molina-Bolívar, G. y Gámez, R. (2023). Visión sistémica del contexto educativo tecnológico en Latinoamérica. *Región Científica*, 2(1), 202358. https://doi.org/10.58763/rc202358

INTRODUCTION

The Latin American reality in the technological-educational context of these times, characterized by globalization and the effects left by the COVID-19 pandemic, demanded and still demands the implementation of emergency pedagogical-technological strategies and solutions to face unexpected situations (Antón-Sancho & Sánchez-Calvo, 2022; Apolo et al.,

2020; Quispe-Prieto et al., 2021). Although the progress achieved at the beginning of the century in terms of the growth and expansion of Latin American educational portals was relevant (Salas-Pilco et al., 2022), moving from a unidirectional education to an era of technological innovations, this field was seen to have collided with the effects of the pandemic in terms of economics and inclusion (Acevedo et al., 2023; Kazemikhasragh & Buoni, 2022).

This implied resorting to the accelerated, and not always well-supported, incorporation of various information and communication technologies (ICT) in educational systems (Succar et al., 2022), with the sole purpose of mitigating the effects of the pandemic and allowing processes to continue in virtual environments due to the impossibility of sustaining face-to-face attendance; this decision also had significant effects on human welfare (Antón-Sancho et al., 2022; Neidhöfer et al., 2021). In this sense, Lugo et al. (2022) state that, in Latin America, the programs and alternatives designed, to a certain extent, expressed the identity of each country and its scientific and academic cultures. Although they were primarily aimed at creating and extending technological educational resources for the consumption of students and teachers, they later became part of the practices of different communities of interest (Lugo et al., 2022).

This accelerated entry of educational technology into practices, discourses, and agendas led to the review and modification of various components influenced by economic development and previous levels of digitization (Antón-Sancho et al., 2023; Cechinel et al., 2020). Among the most outstanding aspects, the design of software, platforms, and virtual teaching and learning environments were identified, generating an ostensible growth in Education Technology (EdTech) (Sharma, 2022; Dussel, 2020). This increase boosted the substantiation, design, and implementation of strategies to provide answers to the problems that arose and to the complex web of previous shortcomings (Ahmed et al., 2021).

In the face of such Latin American techno-educational emergencies, the contributions of international organizations were immediately felt. These were primarily focused on advising on transnational lines of action and promoting spaces for debate on the functions and possibilities of development offered by educational technology, among others. Another element to be highlighted was the incorporation into the debate of critical concepts in modifying educational praxis, such as lifelong and life-wide education, educational models and virtual environments, accessibility, inclusion, and equity. Likewise, these organizations are committed to appropriate and efficient use of technology for all educational stages with the primary objective of expanding the scope of quality education through investments and financing projects that commit Latin American countries to achieve these objectives.

Regarding the commitments assumed by Latin America before these organizations, there are different opinions on the influence exerted by these international organizations on Latin America's ideological and social activities. Among these opinions, the one issued by Martínez and Tudela (2021) stands out. They analyze the main discursive lines in the political agendas of two of these organizations (UNESCO and OECD) and, about educational technology, warn about the concomitance of phenomena such as privatization and decision-making under the protection of a high technological discourse. For the authors, the digital educational governance imposed by these organizations has contributed to the entrenchment of forms of privatization, which have become associated with the standardized course of public education (Martínez & Tudela, 2021). From these ideas, we can see the contextual importance of understanding not only the technical and educational aspects but also the socio-political and cultural aspects that condition the implementation of educational technology and its results.

In this sense, the influence of digital governance in the educational sector is influenced by the interests, of various natures, of software developers, production and marketing companies, among other social agents that make up the technology sector, which in some way define what quality education is (Decuyperea & Lewis, 2021). However, the educational practices produced within educational institutions also express colonization and subjection to neoliberal discourses based on their concepts that do not always represent the real problems and conditions of the Latin American context. Therefore, the main challenge is for digital governance to become an instrument to promote the agency of vulnerable subjects and communities (Ni, 2022).

Within the framework of these two divergent positions, the concern arises to investigate how the discourses issued by such organizations represent the actual techno-educational reality that crosses the Latin American context. These instances are represented by the objectives that international organizations propose to fulfill in order to offer a technological education by these times, on the one hand, and the covert governance that lies behind these objectives, on the other hand, which goes against digital sovereignty and the regulatory control of the nation-state (Pohle & Thiel, 2020). This study made it possible to explore to what extent the proposed solutions are feasible to implement in the geographical and socio-political diversities that characterize this context.

Based on this concern, the purpose of this research was to diagnose the main lines of discourse on the reality of Latin America in the context of educational technology from the perspectives of the World Bank (WB), the Economic Commission for Latin America and the Caribbean (ECLAC); the United Nations Educational, Scientific and Cultural Organization (UNESCO), and the Organization for Economic Cooperation and Development (OECD). In order to achieve this purpose, this work was structured into five sections that begin with the methodology adopted to carry out the diagnosis above and then describe the results represented by the texts under analysis. The third section includes tables containing the hermeneutic-discursive process to which the extracts were subjected and which facilitated their discussion. Finally, this work culminates with the conclusions derived from the research process.

METHODS

The present study was based on a qualitative approach, focusing on the meanings attributed by individuals and groups, which are expressed in their discursive productions (Taylor et al., 2016). According to these authors, adopting this posture allows the development of ideas and knowledge from an inductive approach (Taylor et al., 2016). The methodology used to fulfill the research objective corresponds to documentary and interpretive studies based on analysis oriented to reliability and rigor (Mackieson et al., 2018). In this sense, this work focused on analyzing the discourse exhibited in the proposals issued by international organizations about the techno-educational situation in Latin America.

As an analysis technique for these proposals, discursive hermeneutics was used to study the manifest and latent signs and meanings in the discourse through the interpretation of the socio-communicative context in which it is produced and to which it alludes (Malherbe et al., 2020). The procedure employed was based on the exposition of the text and the establishment of analogies based on comparisons and contrasts of the original text from the preconceived and emergent themes, which allows the study of the corpus as a communicative system rather than as individual objects (Malherbe et al., 2020).

Therefore, the allocutions issued by the bodies under study are presented, and then, for their analysis and discussion, they are exposed in comparative tables. This documentary-interpretative analysis was based on the texts issued by the international organizations under study, whose topics are presented in *Table 1* below.

Table 1.
Texts subjected to hermeneutic analysis

1	Education in Latin America is facing a silent crisis, which will eventually become strident (WB, 2020).
2a	Social Panorama of Latin America and the Caribbean (ECLAC, 2022).
2b	The Sociodemographic Impacts of the COVID-19 Pandemic in Latin America and the Caribbean (ECLAC, 2022).
2c	Preliminary Overview of the Economies of Latin America and the Caribbean, 2021 (ECLAC, 2022).
3	Education in times of the COVID-19 pandemic (UNESCO, 2020).
4	Making the Most of Technology for Learning and Training in Latin America (OECD, 2020).

Source: Own elaboration.

The criteria for inclusion of the texts selected for analysis were limited to the date of issue and content. Regarding the date, the most updated texts were considered issued post-pandemic, from 2020-2022. In terms of content, we considered those texts that revealed the vision of the Latin American reality and possible solutions to these realities. After reading each of the selected texts, we extracted the analysis units and their corresponding categories. table 2 below summarizes how this analysis matrix was formed.

Table 2.
Analysis matrix

Units of Analysis	Categories
Vision of the Latin American reality regarding technological education.	Problem description
	Use of technologies by region in the face of the crisis
Proposed solutions	Short-term measures
	Long-term measures

Source: Own elaboration.

RESULTS AND DISCUSSION

As mentioned in the preceding paragraphs and by the documentary-interpretative procedure of this research, the texts issued by the international organizations under study are presented based on the analysis matrix designed. This matrix made it possible to extract information concerning the categories selected for the proposed diagnosis from the accumulation of information in the original pages.

Techno-educational realities according to the World Bank (WB)

The information extracted to analyze the World Bank's position on technological education was taken from the interview made in Washington with Emanuela Di Gropello, director of the regional education practice of this organization. The text entitled "Education in Latin America faces a silent crisis, which will eventually become strident" (Di Gropello, 2020) describes the educational situation in Latin America in terms of "silent crisis" and "digital poverty." For the WB representative, this situation arises from the convergence of well-defined groups of factors.

The first group of factors combines the pre-existing structural and functional inadequacies in the Latin American educational context. Before the pandemic, the region, in socio-cultural and territorial terms, was immersed in a complex educational crisis, expressed fundamentally in low levels of learning and unresolved inequalities. The second group of factors brings together aspects related to the hardware necessary for implementing educational models based on or supported by the use of ICTs, the availability of technological resources, and access in disadvantaged territories and communities. In addition, connectivity stands out because, although it is above other global regions, it remained below the average.

According to Di Gropello (2020), this convergence is shown in the data obtained. The author reports that nearly 50% of primary school students could not perform satisfactorily in reading and writing. In an increasingly interconnected world and in the face of the emergence and expiration of technological advances such as the use of the metaverse or text generators, these data suggest that the backlog could increase exponentially. Di Gropello (2020) indicates that these previous inequalities, together with those caused by the pandemic, in a region where sociodemographic data warn that less than 60% of people use the Internet, present and future risks acting on learning in virtual environments and the introduction of educational technology are exceptionally high.

Other World Bank reports state that four Latin American countries have established rational agendas for including educational models based on educational technology, mainly associated with distance education. Among them, the CREA platform, the gamified mathematics platform Matific, and the Country Library stand out in Uruguay. These are fundamental support resources for the transition to this model and represent an essential guarantee for implementing mixed models typical of the new normalities.

Another of the alternatives highlighted was multigrade educational television, which favors the extension of education to families and communities in vulnerable situations, implemented in Mexico. In the case of Colombia, the presence of digital platforms for educational purposes and tens of thousands of digital educational resources was identified. These, organized by grade level, include videos, applications, and games that speak of the diversity of opportunities offered by educational technology.

World Bank (WB) Solution

The discursive response to this situation involves developing a plan containing three phases. The first, which is currently underway, seeks the establishment and execution of plans that guarantee the necessary support to

governments to establish and maintain distance education systems effectively. The assessment offered by the World Bank about the process suggests an adequate response on the part of the region's governments, which includes the use of traditional technologies and mass communication for educational purposes. This represents, for the moment, a crucial way to ensure access to families and communities without Internet services.

The second phase aims to improve the quality of education to promote the consolidation of learning and its sustainability. According to the analysis, this demanded the design and implementation of protocols for the safe operation of schools, mitigating delays in the educational process and its impact on the teaching-learning process. In this sense, educational technology should be fundamental for designing digital supports that favor the recovery of content and the leveling of students. Therefore, this phase entailed the development of a pedagogical framework to ensure the proper use of resources, the preparation of teachers, and the provision of guarantees to vulnerable subjects and populations.

In the third phase, the suggested commitment involves building better than before. To this end, among other aspects, access to educational services in historically disadvantaged areas must be expanded. In this phase, remote and assisted education is the key to raising the teaching and learning process indicators. This plan involves the implementation of structural, curricular, and organizational reforms.

The World Bank points out that these necessary transformations have been postponed several times due to an intricate matrix of causes. However, the discourse also emphasizes that they can be implemented nationally and transnationally among the region's countries. In this sense, the World Bank urges to learn from those cases of countries that have been successful and integrate them into regular processes. Some measures identified to prepare the necessary conditions for fulfilling these efforts are the rational design of curricula and the flexibility of academic calendars for integrating distance and face-to-face education models. It also highlights the improvement of the summative assessment so that it does not depend exclusively on final exams.

To these measures it is worth adding what was proposed by Huepe et al. (2022), who suggest that the necessary changes should not be understood only in aspects related to infrastructure. For these authors, it is vital to incorporate into the debate on educational technology, the dimensions and categories required to guarantee educational quality in distance and mixed models.

Techno-educational realities according to ECLAC

With the understanding that free access to technologies, supported by educational models designed according to the needs of the context, constitutes one of the essential platforms for guaranteeing both citizens' rights and promoting social development, it is necessary to examine such access from a social perspective. ECLAC (2022), in its report entitled: "Social Panorama of Latin America and the Caribbean," characterizes Latin American and Caribbean realities from this perspective. Its study on technological progress and its influence on education and social development revolves around the lack of Internet connection in households, represented through a graph that considers the population under 18 years of age and their social stratum.

According to the ECLAC graph (2022), the socio-demographic distribution of connectivity severely affected children and adolescents in the most impoverished social sectors. According to statistical data, 8 out of 12 countries in the region showed rates above 60% of households without Internet access. These cold data must also be understood contextually and their implications thoroughly evaluated, as they point not only to connectivity problems but also warn of possible associated problems such as information illiteracy.

El Salvador, Honduras, Paraguay, and the Dominican Republic were the countries where the low-income sector was most affected. Another cardinal aspect is that these limitations are not confined to the "poor" classification since people who do not qualify as such but whose income is low according to the cut-off points were affected. In as many as five countries, more than 50% of this sector of the population, which is also often vulnerable because it does not benefit from specific programs or agendas for assisting, reported a lack of Internet in the family nucleus. In another four countries, 40% of children under 18 were affected.

In the analysis of the data provided in the report, the extreme cases for these two population sectors were found in Brazil, Panama, and Uruguay. In contrast, the two middle and higher-income sectors showed low access to connectivity in the family nucleus. These data reveal considerable socio-educational inequities and, to some extent, allow us to contrast these results with those shown by standardized tests.

One of the most alarming facts the report exposes is that it offers an overview of the complex Latin American

scenario in terms of achieving educational quality indexes similar to those of developed countries. This circumstances are expressed in the fact that the smallest distances registered between extreme distribution sectors appeared in El Salvador, Honduras, and Bolivia, which is explained fundamentally in the first two because the limitations in connectivity appeared significantly in the middle or higher-income strata.

This panorama is especially threatening to the region's future regarding ideal aspects such as transnational educational and academic collaboration, the development of educational technology as a vehicle for social development, and the strengthening of pedagogical processes in general. As evidence worldwide shows, COVID-19 generated an accelerated movement towards using technology for educational purposes, even those not explicitly designed. However, technological infrastructure was an almost generalized problem, even in developed countries, which highlights the complexity of the contexts analyzed.

ECLAC Solutions

The solutions presented by this organization in the report above focus on the conception of pedagogical models that support blended learning, an aspect included in other reports and defended by experts in the field. This not only implies the combination of virtual and face-to-face spaces but also the inclusion of technologies in the teaching-learning process and the virtualization of processes based on educational innovation. Based on these general guidelines, ECLAC proposes an investment plan that should consider access and infrastructure, including both the macro technology provided by the State and the private sector, as well as personal devices (Smartphone, laptop, or similar). In this way, the universalization of access appears as the basis for socio-educational transformation.

However, it is recognized that this expansion of services and goods alone cannot represent the required change; family information literacy, teacher training, parenting schools, and other processes must be focused on the psychosocial transformations required to accompany these changes suggested in the implementation of the primary digital basket (ECLAC, 2020b).

Techno-educational realities according to UNESCO

The vision of the Latin American realities of this organization concerning technological education is reflected in its report entitled: "Education in Times of the COVID-19 Pandemic (2020)". This report, based on the results obtained in the application of the PISA test, showed that 80% of the 15-year-old students who participated in the region had access to the Internet in the family nucleus. However, only 61% had access to a computer and its features, while only one-third of the sample acknowledged having educational software on their device. Due to its mission and vision, this organization shows concerns regarding the limited equipment and access in the report. This reality is confirmed in the comparisons made with adolescents in OECD countries.

Although connectivity is not a significant problem in this age group, as it is for Latin American children, the existence of populations distributed throughout the region that are victims of socio-educational exclusion is recognized. As seen in this report, infrastructure and Internet access aspects are also of concern. The results of the analyses show that the forms of access available because they are diverse and complex, have received more attention than other conditioning aspects of educational technology as a discipline and reality in the region.

From a psychoeducational and social point of view, access to the Internet and electronic devices only guarantees adequate exploitation and satisfaction with the basic standards of technological educational models. Since not all conceptions and experiences have achieved the expected success rates, they should be reviewed in their human aspects from an integral approach. Aspects such as inequality in access to digital education, information and knowledge management, and cultural capital, among others, are part of the situation above before the pandemic, pending solutions. The social implications go beyond education and are projected onto other sectors, hindering regional development.

UNESCO Solutions

For UNESCO, the design of an agenda is vital, but it must be based on a multidimensional perspective. As mentioned, this organization's mission conditions the focus and scope of its proposal. In addition to mentioning access and equipment, plans should include sections to prepare students for insertion, socialization, and education in virtual, personal, and group environments. Likewise, emphasis is placed on the preparation of adults (teachers, school principals, educational leaders, and family members) to guide students while participating in these processes. This implies that these agents achieve effective mediation in the teaching-learning processes.

Techno-educational realities according to OECD

For the analysis of these realities, the OECD (2020) working paper entitled: "Making the Most of Technology for Learning and Training in Latin America" was taken into account, which presents a broadly comparative analysis of the barriers that hinder the development of the infrastructures needed to exploit ICTs.

In terms of obstacles, the paper highlights that the countries of the region show significantly low results, compared to other OECD countries, in terms of the digitization of society. Regarding connectivity, the report shows that broadband services are considerably lower in Latin American countries, which points to another aspect that affects the possibility of implementing a technological educational model: the quality of connectivity. This aspect has a particular impact on platforms such as Moodle, Jitsi Meet, and Zoom, virtual environments of particular use for teaching and conducting mixed or purely distance processes.

For the OECD, digital divides express deep social inequalities, which, from a territorial point of view, are generalizable to the entire Latin American region. Contradictorily, in rural environments, mobile internet use is considerably lower than the global average, with 11 percentage points in terms of the gap. These data place it in the same range as Europe and Central Asia. However, overcoming these limitations continues to be a key element in mitigating inequalities in Latin America and, in addition, contributing to social development in rural areas.

Finally, due to the saturation in the data analysis, it is necessary to highlight that the TALIS results showed that school principals recognized the adverse effects on schools generated by the inadequate exploitation of ICTs. For these educational agents, the quality of the training offered by the institutions they direct is directly conditioned by introducing these technologies to the normal functioning of the teaching-learning process.

OECD Solutions

The solutions proposed by the OECD lean towards taking advantage of virtual educational environments and other virtual spaces that can be adapted for educational purposes. In this sense, state and educational policies should be aimed at converging efforts to balance technological infrastructure and educational quality. Therefore, in addition to the investments required to guarantee the material base, a transformation of the educational reality nourished by these incorporations must be promoted, allowing a better use of the new opportunities. According to this organization, integrating technological development into educational innovation processes significantly contributes to satisfying educational needs, a fact that can be reflected in academic performance.

Hermeneutic-discursive analysis

Subsequently, the hermeneutic-discursive technique was applied, establishing the coincident and divergent aspects of the two units of analysis used for the proposed diagnosis. Thus, the vision of the Latin American reality regarding technological education, according to international organizations, and the solutions offered by these organizations in the face of such realities were examined. In this sense, this section has two sections detailed below.

About the first unit of analysis

With respect to the first unit of analysis, Table 3 below reports the vision of the Latin American reality regarding technological education held by the organizations under study.

When observing the problematic description column, the common term highlighted and found in the speeches of these organizations is the pre-existence and even existence of Internet access difficulties in Latin American regions. In this sense, these digital access deficiencies must be different in the countries that make up this context if we start from the different economic, social, and political characteristics that prevail in this region. For this reason, it is unproductive to use the same yardstick to diagnose such access.

From a discursive perspective, the second point that draws attention is the qualification or categorization made by the World Bank to classify the “digital poor.” In this sense, Martínez and Tudela (2021) criticize this decision based on the results of a standardized test, which judges the development of each country’s educational systems in comparison with international standards based on global economic indicators.

Table 3.
Vision of the Latin American reality regarding technology education, according to international organizations.

Ente	Description of the problem	Use of technologies by region in the face of the crisis
BM	Previously existing silent crisis and digital poverty	Outstanding countries despite the crisis: Uruguay, Mexico, Colombia and Chile.
CEPAL	Internet access gaps in households, mainly in those corresponding to the lowest social strata previously detected.	Countries most affected by the digital divide: El Salvador, Honduras, Paraguay and the Dominican Republic.
UNESCO	Significant inequalities in terms of digital equipment according to the results obtained by the PISA test. Increase of pre-existing gaps in terms of technological-educational access.	Chile and Uruguay have greater access to equipment.
OCDE	Obstacles with respect to access to technological infrastructure and connectivity limitations in comparison with other PISA countries. According to the TALIS survey, around half of the principals state that the scarcity or inadequacy of ICT has always hindered the ability of schools to provide quality education.	In Mexico and Panama, the gaps by socioeconomic and cultural level are smaller.

Source: Own elaboration based on the reports.

On the other hand, in this same column of the description of the problem, we can observe the observation made by the OECD regarding the obstacles regarding access to technological infrastructure and connectivity limitations compared with other OECD member countries. This analysis incurs the same bias as described above since the scales used may be dispersed or make it difficult to understand the region's needs since economic aspects distort the data.

Regarding the use of technologies by regions in the face of the crisis, the coincidences place Chile and Uruguay as those countries that stood out for using these technologies in education. The divergences in the panorama presented by these organizations are centered on naming Peru as the country that, through its project, can reach remote areas. This quality is only mentioned by the OECD.

About the second unit of analysis

For the discussion of the second unit of analysis, represented by the solutions offered by the organizations under study to the realities exposed in the previous section, the results obtained after the hermeneutic-discursive analysis are presented in *Table 4* below.

From the perspective of the discourse issued by these organizations, the words and phrases highlighted lead us to infer the medium and long-term solutions they propose. Expressly, on the part of the governments of the Latin American region, the investment of financial resources to adopt such solutions is seen as necessary.

Implementing the three-phase plan proposed by the World Bank and the digital formats suggested by ECLAC, as well as the equipment and investments in ICTs highlighted, not only requires a change in government policies within the region's countries. In addition, financial support is needed which make nation-states dependent on these international organizations. This relationship of dependence on international entities has an influential character on the educational policies of Latin American countries. The educational models project that these organizations impose their suggestions as part of global educational governance.

Table 4.
Solutions to the realities detected

Ente	Short-term measures	Long-term measures
BM	Implementation of a three-phase plan.	Restructuring of curricular content to compensate for periods of remote education.
CEPAL	Implementation of mixed models	Provide a basic digital basket of effective connectivity with the consent of intergovernmental agreements.
UNESCO	Improvement of digital equipment from a multidimensional logic.	Implementation of state and educational policies for the reversal of the digital divide, as well as better attention to equity and inclusion.
OCDE	Balance between ICT investments and educational quality in schools.	Design of the technological educational model with an integral approach.

Source: Own elaboration.

CONCLUSIONS

The support granted by international organizations for the massive incorporation of technology in education favored that some Latin American countries were considered examples to follow in terms of its use and appropriation to achieve a didactic process in this era of information and knowledge economy. However, there are still questions from the panorama presented, which revolve around the relationship of dependence and ideological influence underlying this support.

The coincidences detected point to the efforts that the region's countries must make to bring technology to educational institutions in terms of equity and overcome inequalities in pre-existing and existing digital divides. However, on a medium or large scale and with the digital resources available to these countries, education continued during the pandemic. This demonstrates that technology was leveraged during this time of health crisis.

REFERENCES

Acevedo, I., Castellani, F., Cota, M., Lotti, G. y Székely, M. (2023). Higher inequality in Latin America: a collateral effect of the pandemic. *International Review of Applied Economics*, 1-25. https://doi.org/10.1080/02692171.2023.2200993

Ahmed, Z., Nathaniel, S. y Shahbaz, M. (2021). The criticality of information and communication technology and human capital in environmental sustainability: Evidence from Latin American and Caribbean countries. *Journal of Cleaner Production*, 286, 125529. https://doi.org/10.1016/j.jclepro.2020.125529

Antón-Sancho, Á. y Sánchez-Calvo, M. (2022). Influence of Knowledge Area on the Use of Digital Tools during the COVID-19 Pandemic among Latin American Professors. *Education Sciences*, 12(9), 635. https://doi.org/10.3390/educsci12090635

Antón-Sancho, Á., Vergara, D., & Fernández-Arias, P. (2022). Influence of Country Digitization Level on Digital Pandemic Stress. Behavioral Sciences, 12(7), 203. https://doi.org/10.3390/bs12070203

Antón-Sancho, Á., Vergara, D., Sánchez-Calvo, M. y Fernández-Arias, P. (2023). On the Influence of the University Tenure on the Digital Pandemic Stress in Higher Education Faculty. *Behavioral Sciences*, 13(4), 335. https://doi.org/10.3390/bs13040335

Apolo, D., Melo, M., Solano, J. y Aliaga, F. (2020). Pending issues from digital inclusion in Ecuador: challenges for public policies, programs and projects developed and ICT-mediated teacher training. *Digital Education Review,* (37), 130-153. http://greav.ub.edu/der/

Cechinel, C., Ochoa, X., Lemos dos Santos, H., Carvalho, J., Rodés, V. y Marques, E. (2020). Mapping Learning Analytics initiatives in Latin America. *British Journal of Educational Technology*, 51(4), 892-914. https://doi.org/10.1111/bjet.12941

Comisión Económica para América Latina y el Caribe - CEPAL. (2022). *Panorama Social de América Latina y el Caribe 2022: la transformación de la educación como base para el desarrollo sostenible*. CEPAL. https://

repositorio.cepal.org/handle/11362/48518

Decuyperea, M. y Lewis, S. (2021). Topological genealogy: a methodology to research transnational digital governance in/through/as change. *Journal of Education Policy*, 38(1), 23-45. https://doi.org/10.1080/02680939.2021.1995629

Di Gropello, E. (2020). *La educación en América Latina enfrenta una crisis silenciosa, que con el tiempo se volverá estridente*. Banco Mundial. https://www.bancomundial.org/es/news/feature/2020/06/01/covid19-coronaviruseducacion-america-latina

Dussel, I. (2020). Educational Technology as School Reform: Using Actor-Network Theory to Understand Recent Latin American Educational Policies. In G. Fan, & T. Popkewitz (A cura di), Handbook of Education Policy Studies (p. 35-53). Springer. https://doi.org/10.1007/978-981-13-8343-4_2

Huepe, M., Palma, A., y Trucco, D. (2022). *Educación en tiempos de pandemia: una oportunidad para transformar los sistemas educativos en América Latina y el Caribe* (Serie Políticas Sociales No. 243 ed.). CEPAL. https://repositorio.cepal.org/handle/11362/48204

Kazemikhasragh, A. y Buoni, M. (2022). Financial inclusion and education: An empirical study of financial inclusion in the face of the pandemic emergency due to COVID-19 in Latin America and the Caribbean. *Review of Development Economics*, 26(3), 1785-1797. https://doi.org/10.1111/rode.12884

Lugo, M., Loiácono, F., Brito, A. y Ithurburu, V. (2022). Soluciones tecnológicas para la educación. Desafíos, oportunidades y brechas. *Revista de Ciencias Sociales*, 35(51), 13-32. https://doi.org/10.26489/rvs.v35i51.1.

Mackieson, P., Shlonsky, A. y Connolly, M. (2018). Increasing rigor and reducing bias in qualitative research: A document analysis of parliamentary debates using applied thematic analysis. *Qualitative Social Work*, 18(6), 965-980. https://doi.org/10.1177/1473325018786996

Malherbe, N., Seedat, M. y Suffla, S. (2020). Analyzing Discursive Constructions of Community in Newspaper Articles. *American Journal of Community Psychology*, 67(3-4), 433-446. https://doi.org/10.1002/ajcp.12477

Martínez, J., y Tudela, A. (2021). Las Tecnologías en los Organismos Internacionales: Un Análisis Político del Discurso. *POLÍTICAS PÚBLICAS, EVALUACIÓN Y GESTIÓN*, 51, 1-21. https://doi.org/10.1590/198053147287

Neidhöfer, G., Lustig, N. y Tommasi, M. (2021). Intergenerational transmission of lockdown consequences: prognosis of the longer-run persistence of COVID-19 in Latin America. *The Journal of Economic Inequality*, 19(3), 571-598. https://doi.org/10.1007/s10888-021-09501-x

Ni, M. (2022). Digital Participation for Inclusive Growth: A Case Study of Singapore's Collaborative Digital Governance Model. In E. Giorgi, T. Cattaneo, A. M. Flores Herrera, & V. d. Aceves Tarango (A cura di), Design for Vulnerable Communities (p. 323-327). Springer. https://doi.org/10.1007/978-3-030-96866-3_17

Pohle, J. y Thiel, T. (2020). Digital sovereignty. Internet Policy Review, 9(4), 1532. https://doi.org/10.14763/2020.4.1532

Quispe-Prieto, S., Cavalcanti-Bandos, M., Caipa-Ramos, M., Paucar-Caceres, A., y Rojas-Jiménez, H. (2021). A Systemic Framework to Evaluate Student Satisfaction in Latin American Universities under the COVID-19 Pandemic. Systems, 9(1), 15. https://doi.org/10.3390/systems9010015

Salas-Pilco, S., Yang, Y. y Zhang, Z. (2022). Student engagement in online learning in Latin American higher education during the COVID-19 pandemic: A systematic review. *British Journal of Educational Technology*, 53(3), 593-619. https://doi.org/10.1111/bjet.13190

Sharma, H. (2022). Mapping the Global EdTech Revolution during the Pandemic: From 'Determinism' to 'Solutionism'. In E. Mogaji, V. Jain, F. Maringe, & R. Hinson (A cura di), Re-imagining Educational Futures in Developing Countries (p. 10.1007/978-3-030-88234-1_7). Springer.

Succar, T., Beaver, H. y Lee, A. (2022). Impact of COVID-19 pandemic on ophthalmology medical student teaching:

educational innovations, challenges, and future directions. *Survey of ophthalmology*, 67(1), 217-225. https://doi.org/10.1016/j.survophthal.2021.03.011

Taylor, S., Bogdan, R. y DeVault, M. (2016). Introduction to Qualitative Research Methods: a guide book and resource. Wiley.

FINANCING
No external financing.

CONFLICT OF INTEREST STATEMENT
The authors declare that there is no conflict of interest.

ACKNOWLEDGEMENTS (EXTERNAL ORIGINAL VERSION)
Los autores agradecen a la Universidad de La Guajira por el apoyo para la realización de esta investigación.

AUTHORSHIP CONTRIBUTION
Conceptualization: Iris Jiménez-Pitre, Geomar Molina-Bolívar, Rodrigo Gámez Pitre.
Formal analysis: Iris Jiménez-Pitre, Geomar Molina-Bolívar, Rodrigo Gámez Pitre.
Research: Iris Jiménez-Pitre, Geomar Molina-Bolívar, Rodrigo Gámez Pitre.
Methodology: Iris Jiménez-Pitre, Geomar Molina-Bolívar, Rodrigo Gámez Pitre.
Writing - original draft: Iris Jiménez-Pitre, Geomar Molina-Bolívar, Rodrigo Gámez Pitre.
Writing - revision and editing: Iris Jiménez-Pitre, Geomar Molina-Bolívar, Rodrigo Gámez Pitre.