

## Meta-analysis of the Mexican education system: Evolution and challenges

 Arturo González Torres<sup>1</sup>,  María Luisa Pereira Hernández<sup>2\*</sup>,  Melissa Edith Salazar Echeagaray<sup>3</sup>,  
 Alba Marlene Chan Castillo<sup>4</sup>

<sup>1</sup>National Technological Institute of Mexico/Technological Institute of Milpa Alta, Mexico City, Mexico; cann.azteca13@gmail.com (A.G.T.).

<sup>2</sup>Sinaloa State Pedagogical University, Sinaloa, Mexico; pereirahdz@hotmail.com (M.L.P.H.).

<sup>3</sup>Autonomous University of Sinaloa, Sinaloa, Mexico; salemele@uas.edu.mx (M.E.S.E.).

<sup>4</sup>Institute of Higher Studies for Competitiveness and Development of America, Quintana Roo, México; albaomar3@gmail.com (A.M.C.C.).

**Abstract:** The study analyzes the evolution of the Mexican educational system between 2018 and 2024, considering government reforms and their alignment with the United Nations Sustainable Development Goals. A Systematic Literature Review (SLR) was conducted in eight stages, using specific selection criteria focused on education, equity, and public policy. The main findings highlight five key factors: overall educational progress, the adoption of updated pedagogical approaches, the adaptation of policies to local contexts, the formation of academic groups to evaluate reforms, and the design of educational materials. Statistical analysis confirmed the relevance of these elements. The study concludes that transforming the system requires inclusive and context-sensitive policies, with the participation of various social actors. Practical implications include strengthening teacher training, adapting successful international models, and promoting interdisciplinary research to address current educational challenges.

**Keywords:** Educational changes, Educational research, Meta-analysis, Public policies, Teaching methodologies.

### 1. Introduction

In our country, the context of education has undergone a relevant metamorphosis, mainly in the period 2018 - 2024, where educational reforms have been decisive in the transformation of the Mexican educational system. Hernández Fernández and Marsán [1] and Navarrete Cazales [2] argue that these modifications have emerged as a response to the changes in the social, educational and political needs of Mexico; furthermore, this educational transformation goes beyond simple changes, but rather, it seeks a focus on the continuous improvement of education.

According to Rincón-Gallardo [3] and Osuna, et al. [4] the changes in educational regulations during this period have generated relevant discussions on the education system. Likewise, new approaches have been implemented in each administration, which directly influences the educational model. For his part, De la Cruz [6] cites that, in the health crisis of 2019, evidence was left of the gap that exists in the educational context; in turn, to rethink the usual teaching systems.

According to Hernández [5] and Martínez and Eslava [6] it is essential to examine the development of the educational structure in Mexico during this period, identifying the causes that have influenced its progress. The study will not only allow a better understanding of the changes that have occurred but will also help in the elaboration of pedagogical strategies appropriate to the national context.

## 2. Background

Education is a fundamental human right, which helps to reduce poverty, social inequality and violence. It is the role and obligation of governments to guarantee access to quality education that not only prepares students to develop their skills but also competencies in areas such as problem solving, teamwork and developing critical thinking about things and situations. With the change of government, Mr. Andrés Manuel López Obrador introduced a new educational reform, seeking to address the educational backwardness and outline a more inclusive and equitable model, however, years later it was repealed, marking a point of analysis in relation to the new structures and especially in relation to the direction that education in Mexico will take.

González Canto instructed the cabinet to implement the educational reform of 2013, and to update public policies including the elimination of punitive evaluations of teachers, the inclusion of multicultural and multilingual language in the educational program, another fundamental point was the implementation of programs to improve the infrastructure of schools located in rural areas and the creation of schools in the communities with the participation of the inhabitants.

### 2.1. International

According to the United Nations Agenda 2030, in the section that refers to the Sustainable Development Goals 4, it is established that all countries must and are obliged to ensure that everyone has access to equitable, quality education with an inclusive approach; the countries that have collected this approach and have been successful in its development are Finland, Canada and Uruguay and that could be replicated to study and be able to create and implement public policies in Mexico.

In the international panorama, three nations stand out for their competence in the educational context with an inclusive and equitable approach, which Mexico could copy, strengthen its public policies and generate objective educational reforms.

Finland is the country recognized as a leader in relation to educational equity, the objective is the elimination of socioeconomic barriers, this type of education has an approach whose main objective is the student in a personal and individual way where their needs are met in an objective and personalized way.

In this regard, Canada is focusing on its provinces by introducing public policies to include people with special needs, as well as multicultural acceptance.

Uruguay is named leader in Latin America in the implementation of technologies with an inclusive approach thanks to the support of the federal program "Plan Ceibal", which aims to provide access to digital educational devices and platforms to all corners of the country.

### 2.2. 2030 Agenda and Sustainable Development Goal 4

The 2030 plan for sustainable growth, adopted by the United Nations (UN), is an international strategy to solve the challenges facing the world. According to the United Nations [7] at the center of this plan is the Sustainable Development Goal 4 (SDG 4), which is based on providing education for diversity in an impartial way, promoting spaces of knowledge, without exclusions.

The nation of Mexico has assumed and intends to apply SDG 4 as part of its pedagogical guidelines. Thus, educational policies have attempted to agree with the goals of SDG 4, aiming to improve academic training, equalize opportunities and favor educational development.

Likewise, the Economic Commission for Latin America and the Caribbean (ECLAC) [8] points out that this plan seeks to renew the planet by addressing related challenges such as poverty, inequality and climate change. Tassara [9] states that this international strategy has been adopted by 193 nations and defines 17 central points for sustainable development.

### 2.3. Parameters UNESCO

Among the parameters cited by UNESCO, it states that education should be a universal human right. In the Mexican context, this topic is reflected in the search for inclusive, equitable and quality education. However, in its execution it faces significant challenges, such as: quality in education and inequalities in access. Gamboa and Bonals [10] emphasize the need to strengthen teacher training and improve educational infrastructure to achieve UNESCO's objectives in Mexico. For their part, Cruz and Saavedra [11] state that UNESCO favors governmental educational strategies, emphasizing the importance of having educational models that guarantee integration and promote relevant and comparable learning.

### 2.4. National

In the legal and regulatory sphere, the educational reforms supported several legal changes, among which policy, requiring the state to provide free education at all levels, this fulfils the right to education, which must be of high quality and focus on gender equality, inclusion, respect for sexual diversity, and the right to cultural and linguistic diversity.

Since 2018, education in many countries began to rethink due to the emergence of global issues such as social inequality, climate change and accelerated digitalization.

During this period, there has been a need to include inclusiveness and equity in education, as well as to train students for a constantly changing world of work.

As well as the "New School" program, other programs emerged with the purpose of adapting inclusion and equity in the educational context, among these programs are:

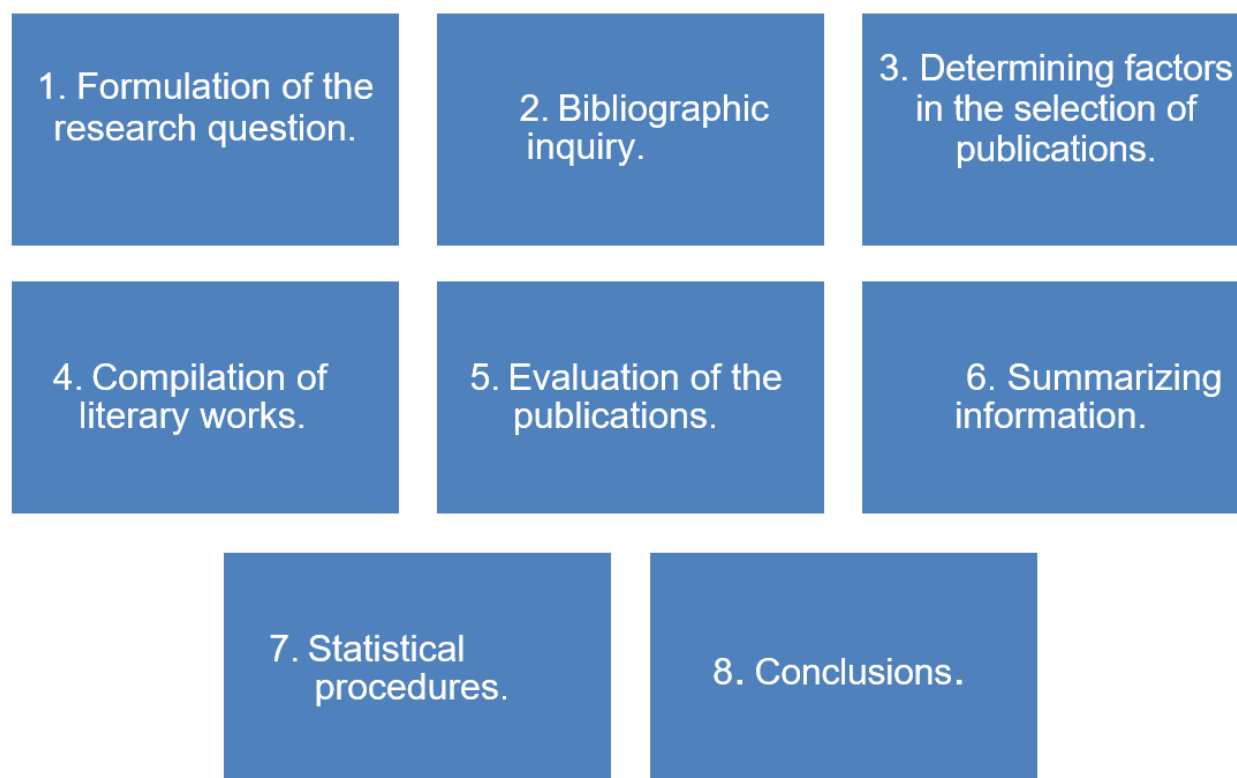
"La Escuela es Nuestra" (The School is Ours), a program that provides economic resources to marginalized schools to improve the physical and pedagogical conditions of public schools.

Benefit: This program has been successful in repairing school infrastructure, acquiring quality educational materials, as well as guaranteeing the necessary basic services such as drinking water and electricity to rural schools.

Intercultural and bilingual education, this program incorporates in its guidelines the inclusion of native languages or mother tongues in the educational curriculum, training teachers in bilingual education and incorporating textbooks in indigenous languages.

Benefit: I am able to support more than 25 million inhabitants who still preserve their indigenous languages or mother tongue.

Another program was the revaluation of the teaching profession, with the objective of prioritizing the needs of teachers in relation to continuous training, focusing on inclusion and attention to diversity, thus recognizing the trajectory of the teacher and taking advantage of his or her experience, and eliminating the evaluation obligations for the stay in the position.



**Figure 1.**  
Stages of Systematic Literature Review. Source: own elaboration based on Colín [12].

Phase 1. The research problem was designed. In this way, the topic to be investigated was established along with its scope.

Phase 2. The bibliographic research was carried out, where the search terms were established, which were: "Teaching system", "equitable", "educational reforms", "Mexico". It was also decided to use open access search engines, where REDALYC was chosen due to its environment, which facilitates the reach of publications to readers, ideas that coincide with Aguado López, et al. [13].

Phase 3. The search filters were established, and the elements taken into account were as follows:

- Period: Corresponding to the year 2024.
- Language: Spanish.
- Disciplinary field: education.
- Country: Mexico.

Phase 4. The search was carried out, including the filters of phase 3, and 42 manuscripts were obtained.

The information was recorded according to a document.

Before continuing, a review of the remaining manuscripts was carried out. The following variables were weighted: manuscripts unrelated to the topic of examination and duplicate articles. Only 2 manuscripts were located.

Phase 6. Each article was reviewed using an instrument. The objective was to evaluate the content of each manuscript.

Step 7. Project stages can be measured through mathematical models that measure total productivity or at any stage of the project.

Step 8. Each manuscript was reviewed, and a table was prepared to illustrate the findings.

### 3. Methodology

For the present study, the 8 steps proposed by Colín [12] related to the Systematic Literature Review were carried out (see image 1),

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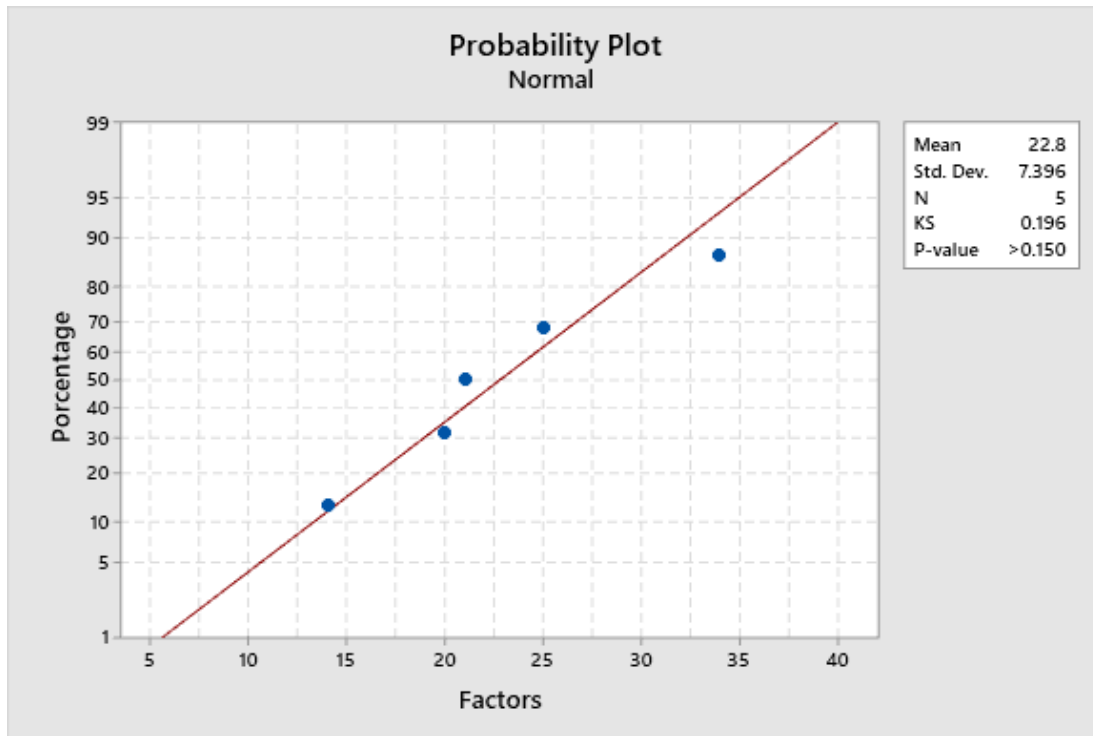
### 4. Analysis of Results

Table 1 summarizes the elements, where the initial column represents the elements, column 2 indicates the final number of citations.

**Table 1.**  
Identification of successful actions.

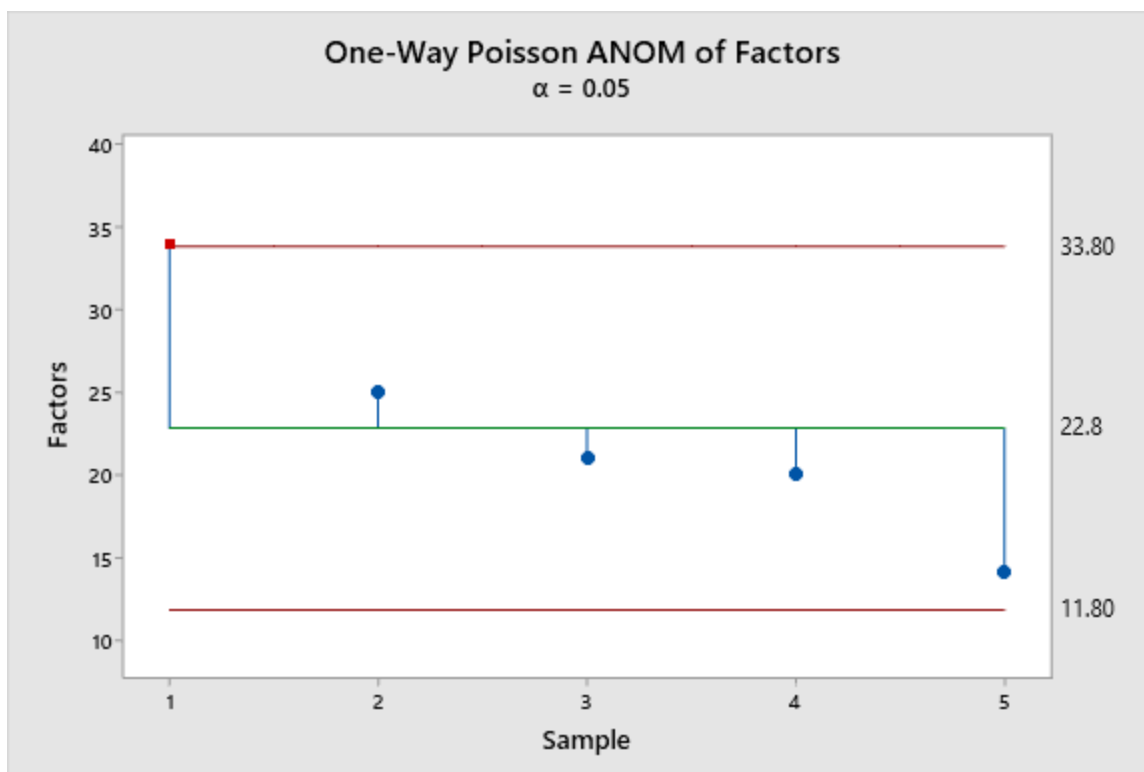
Elements	Final frequency
Progress in the educational context stands out as an element	34
Adoption of updated teaching approaches and plans.	25
Adequacy of national policies to regional and local conditions	21
Establishing academic groups for the study and evaluation of the reforms.	20
Design of educational materials and resources	14

After counting column 2, the next step was to find out whether the data showed normal behavior. Figure 2 represents the figures obtained. The approximate P value = 0.150, showing significance greater than 0.05, assumes normality in the behavior of the data, ideas that coincide with Luzuriaga-Jaramillo, et al. [14].



**Figure 2.**  
Normality test.  
Source: Minitab 19 (2025).

The next step is the application of Poisson means analysis. The test determined that 1 of the 9 factors can be considered critical (factor 1), factors 2,3,4 and 5 have sufficient evidence to be considered important factors (Figure 3).



**Figure 3.**  
Analysis of averages.  
Source: Minitab 19 (2025).

The progress of the educational structure in Mexico was influenced by one main factor and four elements that should not be overlooked.

## 5. Discussion

The study report evidences five variables, which have had an impact on the development of the educational system in Mexico in the period 2018 - 2024. The progress of the educational context stands out as an element, supported by 34 authors, which agrees with Hernández [5] who points out the need to keep a record and carry out an examination of changes in educational policies to understand their real impact.

The adoption of updated teaching approaches and plans appears as the second element with the most agreement, with 25 authors. This coincides with the principles of the New Mexican School detailed by Osuna, et al. [4], which highlight the need to modify educational strategies to achieve accessible and prioritized teaching.

Adequacy of national policies to regional and local conditions, supported by 21 authors, was the third most outstanding variable. This result is aligned with that described by Martínez and Eslava [6] the relevance of adapting educational reforms to the current sociocultural contexts that the nation is experiencing.

The establishment of academic groups for the study and assessment of reforms, mentioned by 20 authors, ranked fourth in importance. According to Cruz and Saavedra [11] this aspect is in line with the parameters described by UNESCO, which highlight the importance of constant monitoring of progress and involvement of the educational community in evaluation.

The design of educational materials and resources was noted by 14 authors, being the factor with the fewest citations. This variable is linked to the goals of the 2030 Agenda. Tassara [9] argues the relevance of ensuring the delivery of educational resources for each student.

## 6. Conclusion

Transformations in the education sector are relevant for the design of equitable and responsible teaching

. Educational policies represent an opportunity to innovate learning methods and to form inclusive and solidary citizens.

To achieve this, it is crucial that governments, educational institutions and society collaborate to address the challenges that may arise each year and ensure that all students have the same learning opportunities. It is a long-term commitment and with the collaboration of all stakeholders, we can achieve this goal.

It is imperative to take into consideration changes in educational reforms, which must integrate the various intertwining factors that have an impact on students' educational experiences.

Similarly, a survey could be conducted with the studies and their concerns could be included in the research to learn about their experiences and needs in a direct way.

Another point to consider when carrying out not only educational reforms but also Public Policies are the contributions that could be shared with us by countries that have been successful in their educational systems and encourage collaboration between researchers from various disciplines (education, psychology, sociology, etc.) to address the complexity of educational challenges. These lines of research can serve as a starting point for developing a more holistic approach to education.

## Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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## References

- [1] J. Hernández Fernández and E. Marsán, "Satisfaction and perception of improvement among the Graduates of the Mexican dual training model," *Mexican Journal of Educational Research*, vol. 29, no. 101, pp. 333-364, 2024.
- [2] Z. Navarrete Cazales, "Supranational educational policy agendas for secondary education in Latin America," *Revista Latinoamericana de Estudios Educativos*, vol. 54, no. 1, pp. 255-280, 2024. <https://doi.org/10.48102/rlee.2024.54.1.619>
- [3] S. Rincón-Gallardo, "Educate for what? The purposes of education in and beyond collapse," *Revista Latinoamericana de Estudios Educativos*, vol. 54, no. 1, pp. 71-92, 2024. <https://doi.org/10.48102/rlee.2024.54.1.608>
- [4] L. C. Osuna, M. E. Medina Barrios, and K. M. Díaz López, "The new Mexican School: What is it? Educational model, educational policy, or humanist paradigm?," *European Public & Social Innovation Review*, no. 9, pp. 1-22, 2024. <https://doi.org/10.31637/epsir-2024-723>
- [5] A. C. Hernández, *Educational Reform in Mexico: political agreement, political decisions and collective actions, 2012-2013. In Zamitiz, Héctor (Coord.) Pact for Mexico. Legislative agenda and reforms 2013-2014*. Mexico: National Autonomous University of Mexico/The Library, 2016.
- [6] L. Martínez, G. V. and M. I. Eslava, "Comparative analysis of the 2013 and 2019 education reforms in Mexico: progress or setback in basic education?," Graduate Thesis, Universidad Autónoma Metropolitana, Repositorio de la Universidad Autónoma Metropolitana, 2022.
- [7] United Nations, "Transforming our world: The 2030 Agenda for sustainable development," Retrieved: <https://www.un.org/sustainabledevelopment/es/development-agenda/>, 2015.
- [8] Economic Commission for Latin America and the Caribbean (ECLAC), "Agenda 2030 and the sustainable development goals: An opportunity for Latin America and the Caribbean. ECLAC," Retrieved: [https://repositorio.cepal.org/bitstream/handle/11362/40155/24/S1801141\\_es.pdf](https://repositorio.cepal.org/bitstream/handle/11362/40155/24/S1801141_es.pdf), 2018.
- [9] C. Tassara, "Agenda 2030 and challenges of social inclusion in Latin America and the Caribbean," *Documentos de Trabajo (Fundación Carolina): Segunda época*, vol. 29, pp. 1-30, 2020.
- [10] A. L. A. Gamboa and P. L. Bonals, "Education quality a subject of debate. From the definitions of international organizations to the patches of the Mexican educational project," *Revista Internacional de Investigación en Ciencias Sociales*, vol. 12, no. 2, pp. 155-174, 2016.



- [11] R. M. M. Cruz and A. R. T. Saavedra, "UNESCO, the policies and educational systems of the countries of the Latin American region," *VARONA*, vol. 48-49, pp. 15-23, 2009.
- [12] E. Colín, *Organizational factors impacting the successful application of manufacturing cells*. Mexico: Ciudad Juárez Institute of Technology. Chihuahua, 2007.
- [13] E. Aguado López, R. Rogel Salazar, G. Garduño Oropeza, and M. F. Zúñiga, "Redalyc: An alternative to asymmetries in the distribution of scientific knowledge," *Science, Teaching and Technology*, vol. 37, pp. 11-30, 2008.
- [14] H. Luzuriaga-Jaramillo, C. Espinosa-Pinos, A. Haro-Sarango, and H. Ortiz-Román, "Histogram and normal distribution: Shapiro-Wilk and Kolmogorov Smirnov applied in SPSS: Histogram and normal distribution: Shapiro-Wilk and Kolmogorov Smirnov applied in SPSS," *LATAM Revista Latinoamericana De Ciencias Sociales Y Humanidades*, vol. 4, no. 4, pp. 596- 607, 2023. <https://doi.org/10.56712/latam.v4i4.1242>