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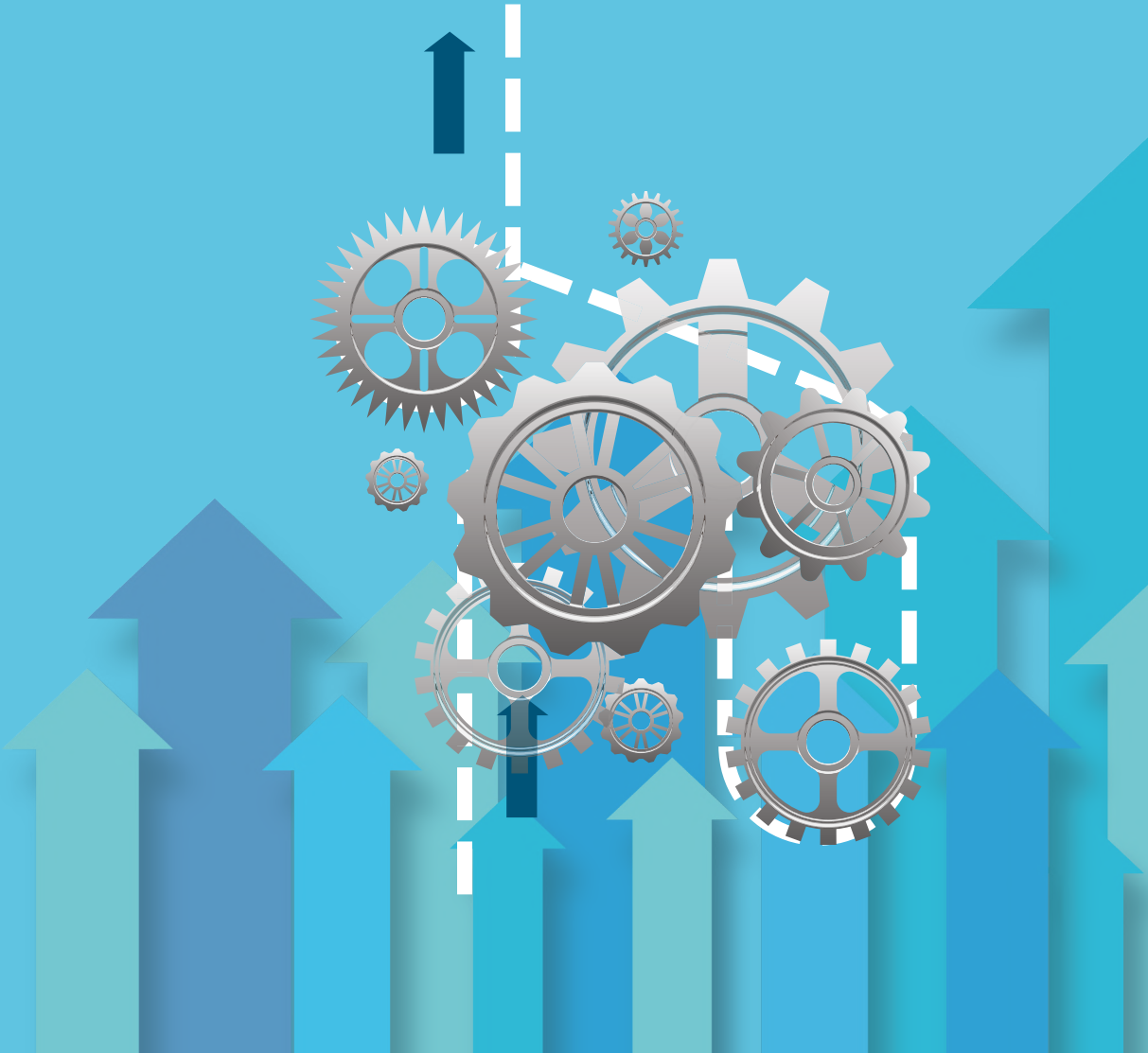## Education Journal of Nicaragua

Education of quality: equity, inclusion and social justice as transformational principles

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Education Journal
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The relevance of quality in education involves the perspectives and contexts of an entity with regard to its own vision and philosophy. It is related to the principles and values inherent in its dynamics. Quality represents challenges and opportunities for the institutions that organize, direct and administer education in the present century.

From a conceptual and philosophical framework, quality education is linked to various perspectives and purposes, with respect to historical periods or stages that have assigned a value to the matter, in this case, to the quality of education. Quality, in a classical sense, suggests the "quality" of something, that is, the essential and particular elements and function of an entity that distinguish it from another.

The definition of quality and, even more, of quality education, remains a constant task for educational institutions at all levels, given the various interpretations and their multidimensional and polysemic character that currently call for a deployment of quality education that does not limit its emphasis to quantitative indicators, this makes it possible to demystify the simplified vision of education in terms of cognitive measurements of students or positive results related to the products or services of the work of educational entities, that is, the relevance of knowledge for insertion into local and global society.

The concept of quality in education lies beyond a logic of measurement of metrics, rankings or expression of attributes of institutions. The quality of education involves serious problems facing today's society to which educational systems must respond with commitment and coherence. In this context, it is important to reflect on quality within a framework and convergence of economic, political, philosophical, curricular and pedagogical dimensions in which the roles of social actors converge.

The first studies and interests in the conceptualization and research of the topic, especially for Latin America, were presented in the '90s with the proposals of Schmelkes (1992), who categorizes the dimension of quality among the social objectives and functions of education; Aguerrondo (1993), with his proposal of quality in education as a complex concept; thus, totalizing, encompassing and multidimensional; and de Casassús (1995), who treats quality education as a socially constructed process and, in this framework as a leitmotif implying themes of power and change.

For his part, Bello (1999) assumes quality in educational is a complex, totalizing concept when applied to the components of the educational field, with a marked emphasis on equity as a synonym for quality for which he proposes its connection with effectiveness and suggestions for its evaluation.

The quality of education in Nicaragua is managed within the framework of the educational policies and strategic vision of the Government of Reconciliation and National Unity (GRUN), through the National Educational System made up

of the following subsystems: Ministry of Education (MINED), National Technical and Technological Institute (INATEC), Regional Autonomous Educational Subsystem (SEAR) and National Council of Universities (CNU), each of which dedicates its framework of action to the educational community and programs according to the level of training. Law 582, the General Education Law of the Republic of Nicaragua establishes the quality of education as:

[...the transversal criterion of Nicaraguan education that challenges educational processes in relation to academic results and the relevance of learning for the life of students. It covers the conception and design of study plans and programs that make up an important part of the curriculum; as well as the performance of the students, of the educational system itself as such and of education in its relationship with the human capital required for the development of the nation. The quality of education aims at the construction and development of relevant learning, enabling students to successfully face the challenges of life such that each one becomes a positive subject-actor for the community and the country. (Law 582, 2006, Art. 6, subparagraph (e)

Transformational principles of quality education

The benchmark of quality education in Nicaragua refers to a quality perspective focused on the full human development of people and of their abilities to contribute to the development of their communities and the country, through the improvement of learning with a vision of transformation. This change from the positivist and simplified view of quality in educational to a transformational vision, according to Harvey and Green (1993) represents the power assigned to the educational community to influence its own transformation. This is because according to the authors:

Education is not a service for a client, but a continuous process of transformation of the participant, whether student or researcher. This leads to two notions of transformative quality in education, improving its consumer and empowering its consumer. (Harvey and Green, 1993, p. 24)

In this order of ideas, quality implies the development of the student's abilities for their own transformation and their involvement in the needs of transformation and profound change in society. It is, therefore, an approach that goes beyond the operational changes of an educational function and its training role to that of a socially committed function.

Law 582, the General Education Law of the Republic of Nicaragua, relates the quality of education to the "construction and development of relevant learning that enables students to successfully face the challenges of life and that each one becomes a positive actor for the community and the country" (Law 582, 2006, Chapter III, Art. 9).

Education for the improvement of the quality of life

Quality education as a process of change and transformation supports the interrelation between the institution-

educational community and institution-family and community. That is, the development of the educational model in Nicaragua bases its fundamentals on the creation of possibilities for the full human development of individuals (students, teachers), families and communities with emphasis on equity, inclusion and social justice as transformational principles; that is, education as a driver of the economic and social development of the nation. The relevance of an educational system that enhances the construction of knowledge and creativity in an integral way, is that it advocates the improvement of quality in education starting from the principle and foundation of satisfying the needs of the educational community and society in general.

In this way, the quality of education in Nicaragua develops from a socio-formative approach, since it has relevance in actions and strategies aimed at improving the conditions and quality of life of Nicaraguans, who assume their commitment through an active role as part of the whole, namely, via processes of change and transformation with local and national identity.

The National Plan to Combat Poverty and for Human Development 2022-2026 demonstrates the country's commitment to ensuring inclusive, equitable and quality education through the training of children, young people and adults; likewise, it prioritizes the training of young people in strategic technical specialties for the development of the country and, accordingly, ensures the allocation of the constitutional 6% of the national budget so as to safeguard and restore the right to public, free, quality higher education

in the context of integral processes of university management through training, research, innovation and social bonding (Government of Reconciliation and National Unity, 2021).

Education in Nicaragua is conducted focused on the formation of citizens who know how to identify and interpret the vision of their development at the personal, family and community levels by means of critical, creative and integral thinking, with inclusive, intercultural dimensions, with relevance and quality, to serve people, communities and the population in general.

The knowledge society, along with imminent current and upcoming changes, will make us rethink the strategies and concrete actions of our institutions, involving the ability to recognize and act with commitment and responsibility to the demands of the educational community and society in general, acknowledging the interrelation between knowledge and development in all possible scenarios of the spheres of social life, taking into account that quality education transcends institutions and thus enables quality to be conceived and realized for the benefit of the development of the nation.

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Presentation

The National Education Commission, through the educational subsystems: Ministry of Education (Ministerio de Educación, MINED), National Technical and Technological Institution (Instituto Nacional Técnico y Tecnológico, INATEC), Regional Autonomic Education Subsystem (Subsistema Educativo Autonómico Regional, SEAR) and National Council of Universities (Consejo Nacional de Universidades, CNU), presents the sixth edition of Índice, Education Journal of Nicaragua, a scientific and academic production, specialized in the field of investigation and educational diffusion.

The new edition of the journal is directed to Education of quality: equity, inclusion and social justice as transformational principles. Education, key to improve people's quality of life, is the main theme of this number in which national and international writers interweave the National Education System in the field of gratuity, coverage, infrastructure, technology and other components corresponding to the guidelines of the National Plan to Fight Poverty and for Human Development 2022-2026.

The partners of this edition expose their ideas and show results of actions and efforts that are being taken by each subsystem to ensure the access to integral education with quality, inclusion, equity, gender approach and interculturality to the protagonist of the educational community in Nicaragua. Through their writings, the academics reaffirm achievements and challenges of education; meanwhile, urge to reflection and educational practices that generate deep and significant changes in favor of a quality education for the transformation of people's social realities.

The section MAIN THEME is integrated by four writings. The first presents the results of an investigation titled *Relation between school attendance and results of score in subjects,* written by Salvador Vanegas Guido and Ramón Ángel Ortega Rocha. The contribution from this study lies in the analysis of seventh, ninth and eleventh grade students' score in correspondence with their attendance. Results show it exists a significant relation between these variables, therefore highlighting the importance of establishing educational policies, in the interest of decreasing scholar absenteeism and, with it, improve the academic performance of students.

On the article *Quality and pertinence on the evolutionary process of technical education and vocational development in Nicaragua* elaborated by Mirna Ileana Cuesta Loáisiga and Marcos Antonio Espinoza Pichardo, the writers propose quality and pertinence as definitive factors for Nicaraguans' technical education and vocational training through a documental analysis which evidence the advance of the National Technical and Technological Institute (INATEC), regarding the coverage, broadening of the academic offer and the strengthening of programs for the teacher updating and training. Likewise, emphasize the constant improvement of the infrastructure and access to resources that contribute to provide a quality technical education.

For their part, the text *Transdisciplinary strategies for a holistic learning in the UNIAV-UNICAM Program*, from the authors Hebler Mauricio Narváez and Lisseth Amparo Mena Amador, describes how transdisciplinary strategies can be

implemented in higher education to solve problematics of the environment in which students live. In the study, the learning experiences of students from the Program of University in the Countryside (Programa de Universidad en el Campo, UNICAM), of the Universidad Internacional Antonio de Valdivieso (UNIAV) are analyzed. The text concludes by highlighting the importance of integrating a transdisciplinary approach with the aim of transforming the real context of learners.

The last paper on the section is an essay by Edgar Salazar Francis. In this, the author reflects on the *Challenges and opportunities of Cultural Diversity in intercultural learning environments*. Main results outline the importance of the curriculum as a tool to implement pertinent and contextualized strategies on intercultural learning environments. Likewise, in the study are described the challenges and obstacles of the National Education System to attend the cultural diversity and facilitate the participation of all the educational community in the process of knowledge building.

The section ARTICLES & ESSAYS presents five writings. The first is an essay titled *A difficult problem: distinguishing between good and bad education*, by the Colombian academic Carlos Eduardo Maldonado. The study invites us to reflect about what determines the good and bad education. In this sense, learning is considered as a good education, because it prepares for life and favors students' critical thinking. On the other hand, highlights the idea that someone teaches because they know, and another learns because they don't, is an erroneous belief. For this reason, it states bad education is founded in teaching.

Subsequently, in the text *Quality education: Analysis situated from the work of the higher education institutions*, Sonia María Orozco Hernández critically analyzes the concept of quality and its application in the educational sphere. Thus, the educational institutions on university level adapt quality in correspondence with the community needs to which they attend to. The essay finalizes with emphasizing the role of the members of the university community to ensure a quality education, and the mission and vision of institutions as referents to carry out their work with thoroughness.

On the other hand, the academic Lilliam Navarrete Rivas, in her study of *Pedagogical accompaniment as indicator of quality in education*, relates this process received by four degrees that are part of the pilotage of the new competency-based curriculum of the Universidad Nacional Autónoma de Nicaragua, Managua (UNAN-Managua). In her conclusion, it restates that the process undergone by these degrees of the new model doesn't vary regarding the treatment of the others. Also, stresses the need of a steeper accompaniment for the improvement of the educative practice.

The teachers Javier Antonio Zúniga Moreno and Rigoberto Alejando King Sing Miranda with their writing *Inclusive and quality vocational training for the full development of people with disabilities in Nicaragua* stand out the opportunities in technical training of people with disabilities, according to the policies implemented by the Government of Reconciliation and National Unity (Gobierno de Reconciliación y Unidad Nacional, GRUN) and through the implementation of the model of professional inclusive training, which seeks to train technically and vocationally this population for their

insertion in society. The study finalizes by highlighting the importance of continuing working to ensure the participation of people with disabilities in the National Education System.

This section ends with the text of Juan Asdrúbal Flores Pacheco, Caroline Maxine Palmer Marley and Henry Alexander Petrie Bejarano, who explain the *Cultural diversity in the Nicaraguan Caribbean Coast: Challenges and opportunities in education*. From this perspective, and through a literature review and analysis of the educational model from the Bluefields Indian & Caribbean University (BICU), the authors raise the management of the cultural diversity as an influential factor in intercultural communication. Likewise, present as main results that the challenges on intercultural contexts can be taken advantage of as valuable opportunities to enrich the educational act. In the same way, highlight the need to promote intercultural communication to offer an equitable and inclusive education.

In the section INTERVIEW, two academics share their contributions and reflections around quality education in the context of Nicaragua. Primarily, it exposes the dialogue with Maribel Duriez Gonzáles, president of the National Council of Evaluation and Accreditation (Consejo Nacional de Evaluación y Acreditación, CNEA), who highlights the work of the National Education System to ensure the quality of education in all levels. Then, it is found the conversation between Elmys Escribano Hervis, from Revista Atenas and the Colectivo Editorial de la Revista Iberoamericana en Investigación Educativa of the Republic of Cuba, and Herman Van de Velde, founder of ÁBACOenRed Nicaragua.

In this pleasant encounter, the academics exchange educational experiences and delve into the strategies and visions to transform education, through the genuine cooperation and inclusion of the community in the educational processes.

In the section BOOK COMMENTARY, Judith Galarza López shares a critical overview of the book *La Gestión de calidad en la cultura organizacional de las Instituciones de Educación Superior nicaragüense. Hacia la instauración de una cultura de calidad en la UNAN-Managua,* by the academics Ramona Rodríguez Pérez, Jaime López Lowery and Isaías Hernández Sánchez. In this collaboration, Galarza invites us to reflect on the concept of quality and the importance of carrying out concrete actions to promote quality on the Institutions of Higher Education (Instituciones de Educación Superior, IES). The author in this section expresses that the quality of education on IES is reflected in its capacity to attend to the community's needs.

In DOCUMENTAL MEMORY is proposed the text Education on the *Frame of the main Education Project (1980 – 1986)*. The chapter of this work addresses the efforts and achievements that were carried out in the first stage of the Sandinista Popular Revolution (Revolución Popular Sandinista, RPS) to strengthen the educational system, having as main project the education, and deep and significative changes for the Nicaraguan population.

Finally, the section POIESIS & PRAXIS starts with the study of Anielka del Carmen Miranda Rivera, *Application of a didactic unity for the development of critical thinking in high school students*. This investigation was done with the purpose of implementing

didactic strategies with students at high school to develop critical thinking, with the interest of facilitating and improving the learning process. Hereafter, the reader will find a selection of poems by two authors: Marvin Salvador Calero Molina, who presents a poetic anthology with which describes the experience of the educational community in the Program of University on the Countryside (UNICAM), as well as a reflection about the teaching practice, and Junior Alberto Pérez, with two works about the meaning and contributions to the Revolution for the social development of the Nicaraguan people.

main theme

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Relation between school attendance and score results in subjects

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Relación de la asistencia escolar y los resultados de calificaciones en asignaturas de estudio

Abstract

The transcendent dimension of an educational research process lies in its results contributing to decision-making that leads to the improvement of results and impacts. In the present study, the possible relationship between student attendance and the improvement of Language and Literature, and mathematics grades have been analyzed through a process composed of two stages: applying Chi square and Kendall's Tau-b tests, to initially define correlation and intensity, in addition, an econometric model of ordinary least squares was constructed with which the direction and magnitude of the relationship between attendance and grades has been defined. The results have allowed us to verify that there is a significant correlation between the study variables, even considering the existence of other variables that complement the relation. In addition, the magnitude size and positive direction between attendance and the subjects included in the study have been made explicit, which has allowed us to conclude the need to focus educational policies that encourage student attendance as part of the efforts to improve school performance, as well as defining future investigative processes that allow inferences regarding the causality between attendance and the subjects of study.

Keywords: school attendance, decision-making, quality education, relation, causality.

Resumen

La dimensión trascendente de un proceso de investigación educativa radica en que sus resultados aporten a la toma de decisiones que conlleven a la mejora de resultados e impactos. En el presente estudio se ha analizado la posible relación entre la asistencia de estudiantes y la mejora de las calificaciones de lengua y literatura y matemáticas de secundaria, mediante un proceso de dos etapas: aplicando pruebas de Chi cuadrado y Tau-b de Kendall para, inicialmente, definir correlación e intensidad de la misma; además, se construyó un modelo econométrico de mínimos cuadrados ordinarios con el que se ha definido la dirección y la magnitud de la relación entre la asistencia y las calificaciones. Los resultados han permitido comprobar que existe correlación significativa entre las variables de estudio, aun tomando en cuenta la existencia de otras variables que complementen la relación. Además, se ha hecho explícito el tamaño de la magnitud y una dirección positiva entre la asistencia y las asignaturas incluidas en el estudio, lo que ha permitido concluir la necesidad de enfocar políticas educativas que fomenten la asistencia de estudiantes como parte de los esfuerzos por mejorar el rendimiento escolar, así como definir futuros procesos investigativos que permitan inferir respecto de la causalidad entre la asistencia y las asignaturas en estudio.

Palabras clave: asistencia escolar, toma de decisiones, calidad de la educación, correlación, causalidad.

Introduction

School attendance, perceived from an abstract collective, is associated with academic performance, as reflected in students' scores on the various subjects across the curriculum. However, it is a more intricate phenomenon than assumed, given the multicausality and dimensionality of factors and variables that compose it. This research presents qualitative, descriptive and correlational findings to delve further into the relation between attendance and academic achievements among seventh, ninth and eleventh grade students in Nicaraguan public schools, on the subjects Language and Literature, and Mathematics.

Attendance is one of the foundational pillars of exercising the human right to education. It creates conditions to engage on the progress of contents and learnings processes' construction; impacts the socioemotional interaction and tributes to a culture of achievement and capacity development from their systematic immersion on the educational

process. Previous research in different countries align with the results of this study by approaching the phenomenon's comprehension.

School attendance, for Saccone (2020), is relevant due to the influence over the structure of approval, disapproval, and recovery processes. Orozco (2020) stresses that, beyond socio-economic factors of the students' environment, it exists factors associated to the scholar context and educational system which influence the attendance, depicting the topic's nuance. Undoubtedly, London et al. (2016) express how students with systematic non-attendance miss key learning and personal development opportunities. Moreover, the accumulative character of absences affects the results of students' school performance.

Barreno-Freire, et al. (2019), aligning with similar studies, found a positive, directly proportional correlation between academic performance and school attendance, applying Pearson's correlation coefficient, which means it exists a positive moderated and directly proportional correlation between variables. It implies that if the percentage of class attendance from students increases, their academic performance mirrors it. Pérez & Graell (2004), measuring it through t of Student and Chi2 Test (Chi-square), found the average score of students who regularly attend to class is higher to those who do not, establishing it generally exists a positive relation between attendance and academic performance.

This research adds to the discussion of world order about the relation and value between attendance and academic performance, particularly within paradigms and mandated attendance policies and sanctions, employed in educational institutions worldwide. In our context, results show it can be stated it exists a significant statistic correlation between attendance and score of Language and Literature, and Mathematics of the selected grades for the study, exhibiting elements to consider for defining the existent correlation's magnitude. Evidence overlaps with similar studies in which, although true, students' attendance is relevant in the learning process. However, it is not the only variable influencing it.

The result's relevance stems from verifying how attendance is inescapable regarding analysis and policy decisions, given it is an inherent part of the variables associated with students' performance, separated from the existent relation's intensity.

Materials and methods

Investigation methodology

The research employed a quantitative, observational, cross-sectional type. The main goal entailed the exploration between students' attendance and their scores on the subjects of Language and Literature, and Mathematics during the second assessment period of 2023. Statistical methods, including proofs of correlation (Chi-squared, Kendall's Tau-b) and econometric models of Ordinary Least Squares, were applied; the outcomes reveal the course and magnitude of the relation between attendance and subjects of study. The processing of data expansion was conducted with the purpose of adjusting the estimations so results can imply the total population from where the sample was extracted.

Selection of study sample

Sampling framework

The population was selected from the country's high school students, particularly seventh, ninth, and eleventh grade of urban area educational centers.

The sample frame selection, in line with the objectives this research aims at, was conducted considering the following criteria:

→ Centers that administer the full cycle of high school, namely from seventh to eleventh grade.

→ Centers that belong to regular high school modality.

→ Seventh, ninth, and eleventh grade, originally belonging to the universe of centers from the sample frame of high school. This selection was made due to these students representing the transition from elementary school to high school and the end of lower and upper high school.

Grounded on the above-mentioned criteria, the sample frame features 291 educational centers, with 1,141 seventh grades, 1,047 ninth grades, and 750 eleventh grades. These represent a total of 87,462 students from 19 province delegations nationally.

Sample selection

For the selection, the methodology of proportional stratified sampling was applied, representative of the 19 province delegations of which proportions were established considering the quantity of educational centers meeting the selection criteria of the sample frame and for each of the province delegations.

The sample was assembled in a two-stage process. First, educational centers were unsystematically selected by province; subsequently, selecting sections of the seventh, ninth, and eleventh grades. Upon selection, vital information is compiled for all students currently active in those sections (current classrooms' enrolment). In this regard, the attendance of Language and Literature, and Mathematics score of 2,528 students are compiled.

Data collection instruments

Data collection was guided to obtain two types of information: primarily, the attendance percentage of all currently enrolled students from the selected grades and sections. These data was compiled for the months of April and May of 2023 (2023 II evaluation cut); the average attendance is determined for the two months, adding the quantity of days student attended class, divided by the quantity of working days. Secondly, it is required to gather each students' score of Language and Literature, and Mathematics in the same period.

Along the aforementioned data, the compilation instrument included other variables of utility to complete the analysis, these were: province and municipality delegation where the educational center is located, school shifts, section, students' sex and age. For the compilation of the data described above, digital formats elaborated in spreadsheets were used, one for the compilation of attendance and another for the compilation of score.

Database register and processing

The data register is executed by technical typists previously trained on Excell format, which databases were conformed by centers, grades, sections, and students are generated. These are subsequently uploaded and processed on the statistic program Statistical Package for Social Sciences (SPSS).

With the entered data, a database of attendance and one of students' scores was built, which were united through the proceeding of SPSS "Merge Files", taking as reference the key variable "Student Code".

Processing and main results for the information analysis

The alternative hypothesis of the study denotes it exists a significant relation between students' attendance and their respective scores on Language and Literature, and Mathematics. To verify this hypothesis, two methodologies allowing to accept or reject it were applied:

→ The analysis of cross-tabulation (cross tab for short) using statistics of Chi Square and Correlation Coefficient of Kendall's Tau-b range (since coupled variables exist), allows to have a first approximation to the possible association between the variables.

Using models of simple lineal regression, which, according to Liviano & Pujol (2013), study the behaviour of a variable defined as "explained variable", in function of another or other variables often referred as "explanatory variables".

Regarding the Chi Square test, when the calculation is carried out, a p-value is determined, indicating the odds of obtaining extreme results as the ones observed in our sample if the null hypothesis is true, stating there is no association between variables. To elucidate the results of Chi Square, we compare the p-value with the level of significance established (generally 3.005). If the p-value is lower than the level of significance ($p < 0.05$), we reject the null hypothesis and conclude there is sufficient evidence to state a significant association between the variables. In this regard, it is noted results are statistically significant. The 0.05 represents the threshold, determining how improbable the results under the null hypothesis must be, with the aim of considering enough evidence exists to reject it.

Results and discussion

Results

Analysis of cross-tabulation using the statistics of Chi Square and Kendall's Tau-b (Language and Literature)

For the simplification of the cross tabs' analysis between the attendance and score of Language and Literature, the variables have been discretised on the following manner:

Regarding attendance:

→ Low attendance (Lower than 70 %)

→ Intermediate attendance (Between 70 % and lower than 90 %)

→ High attendance (Higher or equal to 90 %)

Regarding the scores in Language and Literature and Mathematics:

→ Low score (lower than 70 points)

→ Intermediate score (Between 70 and lower than 90 points)

→ High score (Higher or equal to 90 points)

When analysing the score behaviour in Language and Literature versus attendance, it is possible to observe a defined behaviour in said relation, based on a group with low attendance and score (48.8 %), tending to decrease as the attendance increases (27.3 %). Alternatively, a small group with low attendance and high score (22.4 %) increases as attendance does the same (48.9 %). With the observation method, we can state it exists a likelihood the level of students' attendance can be related with their score in Language and Literature indicating, if attendance is positively increased, score will follow.

To validate the possible statistical relation between attendance and score of Language and Literature, primarily, the analysis of Chi Square was applied through the independence test on contingency tables with multiple classifications.

The goal of making this type of analysis is to determine if there is a relation between two classification criteria or if they are independent when studied simultaneously, under the null hypothesis that there is an independence between both (Ochoa, 2014).

For the analysis with Chi Square, the hypothesis to use has been defined:

H_0: The level of students' attendance is not associated to the level of score they obtain in Language and Literature.

H_1: The level of students' attendance is associated to the level of score they obtain in Language and Literature.

The test is done with significance level of 5 %. The null hypothesis will be rejected if the coefficient of "bilateral asymptotic significance" (p-value) of Chi Square Test is higher than 5 percent, otherwise the null hypothesis is accepted.

Table 1

Percentage of students according to attendance and marks obtained in Language and Literature, (measured as ranges for both variables)

			SCORE LEVEL
	Low score	Intermediate score	High score
Low Attendance	48,8	28,8	22,4
Intermediate Attendance	43,6	24,6	31,8
High Attendance	27,3	23,8	48,9

Own Work

Main theme: Relation between school attendance and score results in subjects

Given:

$$X^2 = \sum(Fo-Fe)/Fe$$

Where:

X2 = Value of Chi Square

Fo = Observed frequence

Fe = Expected frequence

Table 2

Results of the Chi Square test: level of attendance versus level of marks in Language and Literature

Chi Square Tests: Attendance vs Marks in Language and Literature			
	Value	**gl**	**Asymptotic significance (bilateral)**
Pearson's CHI-Square	4,475.514[a]	4	0.000
Plausibility ratio	4,593.083	4	0.000
Linear by linear association	4,190.349	1	0.000
N OF Valid cases	85,017		

a. 0 squares (0.0 %) have expected a count lower than 5. The minimum recount expected is 318.02.

Own Work

By observing the p-value of asymptotic significance (bilateral), revealing is lower than 5 %, allowing to reject the null hypothesis (the level of students' attendance is not associated to the level of score they obtain in Language and Literature), and accept the alternative hypothesis, indicating the following: the level of students' attendance is associated to score level in Language and Literature obtained.

To expand the results' validation, Kendall's Tau-b, a coefficient test of range correlation, was executed, which is a non-parametric measure of correlation for ordinal variables or ranges which considers ties, meaning, tables with the same number of measurement levels, 2x2, 3x3, etc.

As observed on table 3, by making the correlation for the ranges of attendance and score of Language and Literature,

the p-value, or bilateral significance test, is 0.00 which is lower than 5 %, allowing to reject the null hypothesis, implying a correlation between the variables does not exist, therefore, the alternative hypothesis is accepted expressing a correlation between the variables exists. The intensity values of the test's correlation range from −4 to 0 if the relation is negative and from 0 to 1 if the relation is positive; the closer to 1 or −1, the relation's intensity is stronger. In this matter, it is important to mention the intensity of the correlation is low (0.211), indicating the existence of other variables that can alter this relation.

Table 3
Results of Kendall's Tau-b for the level of attendance versus marks in Language and Literature

Correlations: Attendance level versus level of marks Language and Literature			Level of attendance	Level of marks in Language and Literature
Kendall's Tau-b	Level of attendance	Correlation coefficient	v	0,211
		Sig. (bilateral)	-	0,000
		N	86458	84618
	Level of marks in Language and Literature	Correlation coefficient	0,211	1,000
		Sig. (bilateral)	0,000	-
		N	84618	85173

** The correlation is significative on the level 0,01 (bilateral)
Own Work

Analysis of the relation between attendance and score in Language and Literature, using models of simple regression for ordinary least squares

Thus far, the analysis indicated it exists a relation between attendance and score in Language and Literature; however, the direction and magnitude of the relation has not been defined. Regarding the direction, if the increase or decrease of a variable produces the increase or decrease on another (positive direction); or if the increase or decrease of a variable is associated with a decrease or increase on another variable (negative direction).

The relation's magnitude refers to the force or intensity with which a variable is associated to another. In this case, we will use the model of simple regression for least squares to, through the independent variables, imply how much it changes the dependent variable or each unity of change on the independent variable. The models of regression are a functional relation, which constitute an affirmation (frequently expressed as an equation) where a variable, titled the dependent variable, as its name indicates, depends on or is explained by one or more variables expressed as independent variables (Copete, 2007).

Referring to the current research, it can be established the hypothesis of functional relation, in which the score obtained by students (Y) depends on their attendance level (X) on the period of study and, positively, if attendance increases, the score obtained by students in their score increases (positive direction), therefore Y is in function of X.

$$Y= f(X)$$

Analysis of the dispersion graph of variables

The dispersion graph displays a first approximation on the relation's direction, shown on the general tendency of the points in the graphic. In this regard, we observe a positive relation, additionally to the form and strength of the relation, in which the points do not follow a completely straight line, implying a non-lineal or weak relation.

Figure 1
Graphic of Simple dispersion for model of lineal regression, attendance versus marks in Language and Literature
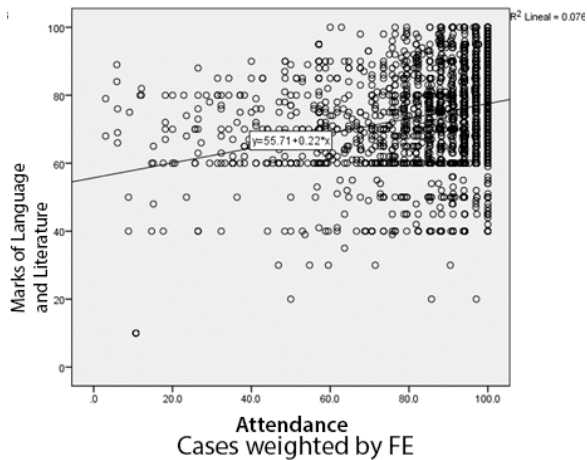
Own Work

F Test of joint significance: results of the table ANOVA

The results contained on the table ANOVA (Analysis of Variance) showcase the possible acceptability of the model in statistical terms. Simplifying the analysis, it can be affirmed it is possible to build a model of lineal regression with these variables, if the resulting significance on the table ANOVA is lower than 5 %.

Table 4

Analysis of variance for the model of lineal regression

Model		Sum of squares	gl	Root-mean-square (RMS)	F	Sig.
	Regression	1384754,744	1	1384754,744	6982,570	.000b
M1						
	Residue	16859758,392	85015	198,316		
	Total	18244513,136	85016			

[a] Dependent variable. LL.
[b] Predictors (Constant). P_Asist

Own Work

Before analysing the results of significance of the table ANOVA, the pertinent statistical hypothesis must be established:

H$_0$: $\beta = 0$

H$_1$: $\beta \neq 0$

In this case, for the lineal model to be valid, it is relevant for the value of beta to be different from zero. Observing table 4, the value of significance (Sig.) is lower than 5 %, meaning the value of beta is different from zero, indicating the model of lineal regression is valid. Essentially, variables are related lineally.

Regression coefficient model

As shown on table 5, the p-value or significance of the independent variable

Table 5

Results of the simple regression model

Coefficients of the lineal regression model[a]

Model		Non-standardized Coefficients		Standardized Coefficients	t	Sig.
		B	r	Beta		
	(Constant)	55,715	,228		244,8730	0,000
M1						
	P_Asist	,218	,003	,275	83,562	0,000

[a.] Dependent variable. LL

Own Work

is lower than 5 %, denoting the relation between dependent and independent variables is statistically significant.

From the information of table 5, the coefficients conforming the equation of the regression line can be extracted:

$$\hat{Y}=a+bx\pm Se$$

Language and literature=
55.715+0.218* Attendance

Aside from statistically significant, the relation is also positive (positive beta coefficient). The above implies an increase of 1 percentual point in attendance would generate an increase of 0.218 points on the score of Language and Literature.

Analysis of cross tabs using the statistics of Chi Square and Kendall's Tau-b (Mathematics)

As in Language and Literature, in Mathematics a behaviour in the relation can be perceived, although less incident than in the subject of Language and Literature. The above is possible to

Table 6

Percentage of students according to attendance and score obtained in Mathematics (measured as ranges for both variables)

Attendance Rane (percentage)	Range of Marks in Mathematics (points)		
	Less than 70	Higher or equal to 70 and less than 80	Higher or equal to 80
Less than 70	60,4	15,3	24,3
Between 70 and less than 90	55,8	21,5	22,7
Higher or equal to 90	39,7	22,7	37,6

Own Work

Table 7

Results of the Chi Square Test: level of attendance versus level of marks in Mathematics

Chi Square Tests: Attendance vs marks in Mathematics

	Valor	gl	Asymptotic signification (bilateral)
Pearson's Chi-Square	3110.913	4	0,000
Plausibility ratio	3.155,909	4	0,000
Lineal by lineal association	2.478,341	1	0.000
N of valid cases	86.376		

[a]. 0 squares (0.0 %) have expected a recount lower than 5. The minimum expected recount is 3184.02.

Own Work

secure, since the students' proportion moves from getting high scores (24.3 %) when their attendance is low, to obtaining high score with high attendance (37.6 %), is lower to the increase observed in Language and Literature.

By observing the p-value or asymptotic significance (bilateral), it can be ascertained this value is lower than 5 %, allowing to reject the null hypothesis implying the level of students' attendance is not associated to the level of scores in Mathematics and accept the alternative hypothesis, denoting the level of students' attendance is associated to the score level in Mathematics.

By applying Kendall's Tau-b rank correlation coefficient the following results are collected:

By analysing the relation for attendance ranks and scores in Mathematics, the p-value or bilateral significance of the test is of 0.00, lower than 5 %, allowing to reject the null hypothesis which indicates a correlation between the variables does not exist. Therefore, the alternative hypothesis is accepted. Yet, the coefficient of the correlation's intensity is low (0.187) and even lower than the one observed in Language and Literature (0.211), validating what was observed on table 6, where the increase of those who obtain higher grades when they improve their attendance, is less significant than the one observed in Language and Literature.

Analysis of the relation between attendance and score of Mathematics, using models of simple regression by ordinary least squares

To complement the analysis of correlation between attendance and score in Mathematics, a model of simple regression by ordinary least squares was applied.

Table 8

Results of Kendall's Tau-b for the level of attendance versus marks of Mathematics

Correlations: Level of attendance versus level of marks in Mathematics

			Attendance level	Level of attendance level of Language and Literature
Kendall's Tau-b	**Attendance level**	Correlation coefficient	1,000	0,187
		Sig. (bilateral)		0,000
		N	86458	85964
	Score levels of Language and Literature	Correlation coefficient	0,187	1,000
		Sig. (bilateral)	0,000	
		N	85964	86389

**. The correlation is significative on the level 0,01 (bilateral).

Own Work

Graphic analysis of variables' dispersion

Simply by observation, the behaviour of the associated variables does not show a definitive tendency can be analysed. However, when drawing the line of total adjustment, it is possible to observe a slight increasing behaviour on the points regarding it as a first testing tool, it exists a positive relation between attendance and score in Language and Literature.

Test F of joint significance: ANOVA table results

Results presented on the ANOVA table, explaining the acceptance of the model from a statistical point of view, are the following:

As observed on table 9, the p-value (0.000) is lower than 5 %, indicating it is possible to build a model of lineal regression with these variables.

Figure 2

Results of the Chi Square test: attendance level versus score levels in Language and Literature
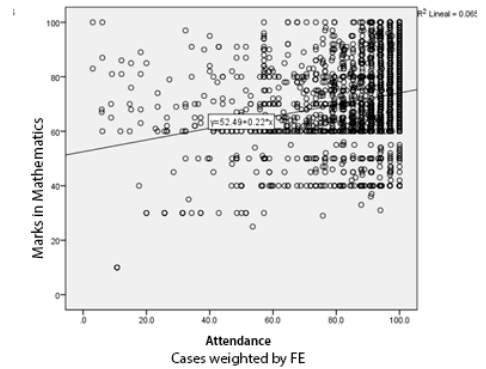
Own Work

Table 9

Analysis of variance for linear regression model

ANOVA[a]

	Model	Sum of squares	gl	Quadratic mean	F	Sig.
M2	Regression	1312744,315	1	1312744,315	59998,407	.000[b]
	Residue	18902747,478	86374	218,849		
	Total	20215491,792	86375			

a. Dependent variable: MAT

b. Predictors: (Constant), P_Asist

Own Work

Regression model coefficients

As shown on table 10, the p-value or significance of independent variable is lower than 5 %, indicating the score is accumulated by students in Mathematics can be explained by the percentage of their school attendance.

From the information on table 10, the coefficients that conform the equation of the regression line can be derived follows

$$\hat{Y}=a+bx\pm Se$$

Language and literature=52.494+0.216*Attendance

The above implies an increase of 1 percentage on attendance would generate an increase of 0.216 points on the score in Mathematics.

Discussion

The research aligns with previous studies, by stressing the importance of students' attendance as a key factor related to the learning process of students. From this lens, the variable is positively related with the increase of students' score, variable considered as proxy of the aforementioned learning, hence the importance of valuing the effect this has on the performance of high school students, specifically on the score of Language and Literature, and Mathematics.

Results stress a statistically significant correlation between attendance and score in Language and Literature, and Mathematics exists on the selected grades. However, it is important to note the existent correlation between these variables and for both subjects is low. While it is true students' attendance is important in the learning process, there are other variables which can affect, as is the case of the educational centres' conditions, the pedagogy and teaching didactics, motivation, support from parents, plus the socioeconomical condition of students, variables resulting as significant on the impact of international test results such as Regional Comparative and Explanatory Study (Estudio Regional Comparativo y Explicativo, ERCE).

Table 10
Results of the simple regression model

		Coefficient				
	Model	Non-standardised coefficient		Standardised coefficient		
		B	Standard error	Beta	t	Sig.
M2	(Constant)	52,494	,243		215,806	0,000
	P_Asist	,216	,003	,255	77,449	0,000

a. Dependent variable: MAT

Own Work

In this case, the results' importance lies in the fact of being possible to evidence how attendance is one of the elements present and part of the variables associated with student performance, independent from existent relation's intensity. Another result of attendance to highlight is the relation and intensity when it is about Language and Literature, regarding Mathematics; in line with the conducted tests, it is possible that the intensity of the relation is higher with Language and Literature concerning Mathematics.

Conclusions

As shown in previous studies, including the Regional Comparative and Explanatory Study of Quality, particularly in the analysis of associated factors, education is multidimensional and multicausal phenomenon, influenced by social and family surroundings, the economic condition, environment and scholar management, the teaching training and applied didactics on the classroom, learning evaluation model, among others. Therefore, no single variable can explain in its cornucopia the results obtained by students on the classroom, although it can be investigated and explicitly demonstrate their relation, direction and intensity.

From the gathered data, it can be stated with evidence it exists a significative statistical correlation between attendance and score in Language and Literature, and Mathematics on the selected grades.

Promoting high levels of students' attendance on their educational centres results of vital importance due to the goal of improvement on quality education,

considering multiple challenges faced to achieve quality of learnings. Knowing and deepening about the type of relations between attendance and academic results contributes to closing the gap on the identification of the factors' diversity that could be affecting student performance and, consequently, act to transform the reality facing the challenges it involves.

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Quality and pertinence on the evolutionary process of technical education and vocational development in Nicaragua

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Calidad y pertinencia en el proceso evolutivo de la educación técnica y formación profesional en Nicaragua

Abstract

Quality and pertinence are determining elements in Technical Education and Vocational Training in Nicaragua; they are present in the curriculum that answers to the productive sectors and national investment projects' demands, as well as in educational policies that restore the rights of the population, for men and women in the countryside and city. Likewise, they are present in the process of updating and specializing teachers and in the dignification of educational environments at national level. The referred results come from an investigation that applied the document analysis methodology technique, executive reports of the curricular transformation process, media monitoring and literature review, with the purpose of ensuring the reliability of the information for the analysis of the evolutionary process the National Technical and Technological Institute (INATEC) has experienced during the period of 2015 to 2023. The process of curricular and infrastructure transformation has allowed to expand the coverage and

diversification of the academic offer, restoring the right to a free and quality with gender equality education. Likewise, the teacher updating and training has allowed the strengthening of competencies on the teaching praxis; by having trained personnel, students receive a quality education, training them with competencies that will allow labour immersion.

Keywords: pertinence, quality, curriculum, teachers, equipment, infrastructure.

Resumen

La calidad pertinencia son elementos determinantes en la educación técnica y formación profesional en Nicaragua; están presentes en el currículum que responde a las demandas de los sectores productivos y los proyectos de inversión nacional, así como en las políticas educativas que restituyen los derechos de la población para hombres y mujeres del campo y la ciudad. También, están presentes en la actualización y especialización docente y en la dignificación de ambientes educativos a nivel nacional. Los resultados referidos proceden de una investigación en que se aplicó la técnica de análisis de documentos metodológicos, informes ejecutivos del proceso de transformación curricular, monitore de medios y revisión bibliográfica, con el propósito de asegurar la confiabilidad de la información para el análisis del proceso evolutivo que ha experimentado el Instituto Nacional Técnico y Tecnológico (INATEC) durante el período comprendido del año 2015 al 2023. El proceso de transformación curricular y de infraestructura ha permitido que se amplíe la cobertura y diversificación de la oferta académica, restituyendo el derecho a una educación gratuita y de calidad con equidad de género. Asimismo, la actualización y formación docente ha permitido el fortalecimiento de las competencias en la praxis docente, al contar con un personal capacitado, los estudiantes reciben una educación de calidad, formándolos con competencias que les permiten la inserción laboral.

Palabras clave: pertinencia, calidad, currículo, docente, equipamiento, infraestructura.

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Main theme:Quality and pertinence on the evolutionary process of technical education and vocational training in Nicaragua

Introduction

Arrién (2000) states quality and pertinence are the exhilarating spirit of all educational process and its results (p. 16). Similarly, Fiszbein et al. (2018, p. 9) refers the priority of quality and pertinence of the educational offer and vocational training to enhance the bond between abilities developed on the educational system and the required ones for the labor market, along its contribution to productive transformation and people's social integration.

Llisterri et al. (2013, p. 16) present the principle of high quality and pertinence education for the development of human capital, steady learning for work and innovation. This approach can relate to Vanegas et al. (2021), who argues about continuous improvement of quality and pertinence of the educational offer and its institutions (p. 13) as a process of collective efforts between educational subsystems and productive sectors.

It is essential to recognize quality and pertinence are intertwined elements established on the General Law of Education:

> *Quality in education:* Quality is understood as the transversal criteria of Nicaraguan education that challenges the educational processes regarding academic results and relevant lifelong learning of students. It encompasses the conception, plan design and study programs, building an important part of the curriculum; as well as the performance or productivity of students, the educational system itself and education in its relation with human capital required for the nation's development. Quality in education aims at the construction and evolution of relevant learning, enabling students to successfully face the challenges of life and for each one to become a positive subject-actor of the community and country.

> *Pertinence in education:* Constitutes the criteria to assess if educational programs, related processes with the achievement of their contents, methods and results, address the current and future needs of students, along the requirements of global development of the country and the need of positioning themselves successfully on international competitivity. (General Law of Education, 2006, art. 6)

Based on the National Plan to Fight Poverty and for Human Development 2022-2026, pertinence is conceptualized as the coherent development of flexible and binding educational process both with demands of economy sectors and student population, through a pertinent and relevant curriculum (GRUN, 2021, p. 92).

Law 1063, INATEC's Regulatory law (2021, art. 3) institutes quality and pertinence in its aims, guided to contribute to the country's economic development and improvement of Nicaraguan people's living conditions through Technical Education and Training, directly with diverse national economic sectors and individual interests of progressive people.

These two indispensable aspects, quality and pertinence, are present in the technical and vocational education of Nicaragua; guaranteed from a curriculum

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that answers the demands of productive sectors and national investment projects, as well as educational policies restituting people's rights, for men and women on the countryside and the city.

Likewise, the updating and specialization in teaching is prioritized as a strategic axis for quality and pertinence in education to be possible, operating simultaneously with the dignification of educational environments through infrastructure rehabilitation, amplification, and construction of technological centers, which have consumable materials and didactic and technological equipment for students and protagonists nationwide.

Quality and pertinence on the national model of technical education in Nicaragua

In its National Model of Technical Education and Vocational Development based in competencies (2018) INATEC integrates quality and pertinence in education, established on the methodology of learning-by-doing, implemented through an indelible culture of curricular transformation, allowing dynamic and engaging spaces with productive sectors, guaranteeing professional profiles and updated curricular documents.

Technical Education and Vocational Development focuses on the development of technical, technological, procedural, attitudinal and entrepreneurial skills. Students and teachers are active subjects in the learning process, promoting a critical, reflective, and proactive mindset. The educational offerings are consistently adjusted to the socioeconomical demands of the country, guaranteeing its relevance and pertinence in different learning modalities.

INATEC's educational opportunities enable students to progressively acquire competencies, facilitating the integration to employability and educational continuity via the articulation with higher education, in degrees such as Administration, Accounting, Programming, Banking and Finance, Agriculture, Food Agro-industry, and Architectural Drawing.

Training is developed through modalities such as in-person, hybrid, b-learning, e-learning with a period of one to three years, in different shifts (morning, afternoon, evening, day and weekend shift). In its manifestations of pertinence, mentioning the integration of learning the English language on 35 technical degrees training programs, crucial to improve students' competencies on a globalized

Figure 1

Elements of pertinence and quality of the Technical and Vocational Training Education in Nicaragua

Own Work

Main theme:Quality and pertinence on the evolutionary process of technical education and vocational training in Nicaragua
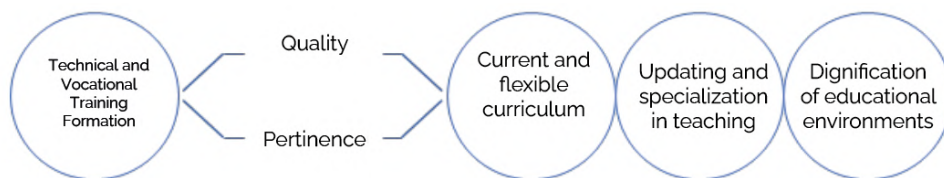
labor market. Competencies for innovation and entrepreneurship are strengthened, along extracurricular activities in sports, art and culture, contributing to full students' full development.

Significant progress has been made, including the coverage increase and diversification of the educational offerings. INATEC expanded from 45 to 61 technological centers in the country, enhancing access to technical, technological, inclusive and free education. The number of degree programs grew from 38 to 70, distributed across three economic sectors: Industry and Construction with 29 degrees, Commerce, Services, Tourism, and Hotel Management with 28 degrees and Agriculture and Forestry with 13 degrees. These advances had an impact on the quality of technical and vocational education in Nicaragua, improving the competencies, abilities and skills of students, giving them opportunities to work and contribute to the country's social and economic growth. The expansion of the formative offer, along with the constant updating of the curriculum and strengthening of the infrastructure and equipment allowed INATEC to efficiently respond to demands from the productive sector and society's needs.

The advances of Technical Education and Vocational Development in Nicaragua are a continuous compromise with quality and pertinence in education, transforming to the requirements of the current socioeconomical and technological context. Barreda (2021) states it has been evolving according to existent needs in the communities (p. 163).

Curricular pertinence for the quality of Technical and Vocational Training Education

Curricular pertinence is an essential component of Technical Education and Vocational Training, demonstrated by accumulated experience on the formative programs and training strategies implemented by INATEC. Since 2015, the institution has been engaged in a curricular transformation process, aiming to improve quality education in the country, aligned with labor demands, human development, and national economy.

The pertinence of Technical Education and Vocational Development is due to the process of curricular transformation taking three incident areas on different programs and strategies of technical and technological education, these are:

→ *Upgrade and design of new professional profiles.* The promoted process of curricular transformation included the updating and design of new professional profiles and curricular documentation of technical degrees. This effort has generated technical, technological, and pedagogical teaching and academic personnel, along with improvement of Technological Centers' infrastructure and equipment. These changes have guaranteed a relevant and tailored education to the needs of the productive sectors and directed to full human development of people, families and communities.

→ *Formative offer and adaptation to labor field.* It is reviewed and evaluated continuously,

assessing territorial context and the productive sector's demands. It is aligned with the National Plan to Fight Poverty and for Human Development 2022–2026, presenting key results, such as pertinent and flexible educational programs, enabling early leave for work and mobility on the national educational system.

→ *Responsibility with the needs and social demands.* Curricular pertinence, as García (2002) and Pupiales (2012) state, is the capacity of educational institutions to address the needs of society's training. It implies constant connection with surroundings to identify challenges and propose solutions, securing that education is socially productive. INATEC has considered these principles since their approach is focused on people, substantiated in Christian, socialists, and solidary values promoted by the Good Government of Reconciliation and National Unity (Gobierno de Reconciliación y Unidad Nacional, GRUN).

INATEC's effort to keep a pertinent technical education and vocational training has been substantial and continuous. Evident through the updating of professional profiles, improvement of infrastructure, certification of teaching competencies and connection with demands of skilled labor force, it allows to guarantee a pertinent and quality technical education. Therefore, curricular pertinence is fundamental to educate qualified technicians that effectively contribute to Nicaragua's economic growth and social welfare.

Teaching training and specialization

These are crucial for the development of a high quality technical and professional education. Thus, INATEC has implemented a series of strategies and programs to prepare and update their teachers in knowledge, skills and abilities.

In 2016, the National Centre for Teachers and Instructors Training (Centro Nacional de Formación de Docentes e Instructores, CNFDI), aimed to certify and improve the pedagogical competencies of INATEC's teachers, the Ministry of Education (MINED) and accredited private technical centers. It contributed to reducing empiricism in teaching and honoring educational work, securing quality in education (Martínez, 2021).

Nieva & Martínez (2016) state permanent and continuous training of teachers is essential to be true agents of change in society. In a context where practical and technological knowledge is increasingly valued, it is fundamental for teachers to also develop a personal and social realm. Different formative strategies exist for teachers, highlighting the following five:

→ *Development of training programs for teachers.* INATEC offers specific programs for continuous training of teachers, including two technical degrees: Technical Specialist in Teaching of Technical and Vocational Education and Technical Specialist of the English Language Didactic. Likewise, over 40 free courses are available, covering a wide range of knowledge and abilities development.

→ *Strengthening technical and pedagogical competencies.*

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Main theme:Quality and pertinence on the evolutionary process of technical education and vocational training in Nicaragua

INATEC's institutional strategic actions include the strengthening of pedagogical, technical and technological competencies of teachers and facilitators. These actions are applied through 11 offices of the CNFDI nationally. This seeks to improve the quality of the learning process with a humanist, holistic and inclusive approach, assisting over 100,000 teachers from public centers of elementary and secondary education, special education, accredited technical private centers and INATEC's technological centers.

→ *Execution of national congresses Technical Education and Vocational Training.* INATEC, in 2015, organized the first national congress of Technical and Vocational Training Education's teachers for curricular transformation, with the participation of teachers from all around the country. This event defined the start of a series of national congresses, equating to nine in 2023. These are centered around the permanent upgrading of teachers, with emphasis on innovation, entrepreneurship, creativity, and use of technologies to improve their competitiveness.

→ *Endorsement of innovation and use of technologies.* Teachers' personal and professional development implies the acquisition of soft skills and use of new methodologies and techniques to evaluate learning, using technological tools and virtual platforms. The integration of innovative and creative ideas in teaching has assisted in obtaining meaningful results centered in students.

→ *Facilitation of spaces of modern learning for teachers.* Teachers have in Technological Centers modern learning spaces, including laboratories with IT and updated technological equipment, farms and educational plots, classrooms and didactic workshops, for applying class content. Moreover, teachers participate in internship programs in companies and institutions, depending on the technical degrees' professional profiles, contributing to the development of competencies and capacities of technical students.

Teacher training and specialization are fundamental roots in INATEC's commitment to improve the technical and professional education in Nicaragua. Through congresses, continuous training programs and creation of modern and well-equipped learning spaces, it guarantees teachers prepared to face challenges of the current educational context, contributing significantly to the professional development of students and the productive, economic and social progress of the country.

Infrastructure and technical and technological equipment

The strengthening of the infrastructure and didactic and technological equipment is key for the full development of students and teachers. In terms of technical and professional education in Nicaragua, INATEC has made important investments and improvements in infrastructure and equipment to secure propitious learning environments for the development of professional and entrepreneurial abilities, skills and competencies.

Between 2015 and 2023, INATEC invested a total of C$ 1,063,985,199.95 in infrastructure on 55 technological centers, including sub-offices, distributed in three productive sectors: 26 technological centers which oversee commerce, tourism and hotel management, 19 technological centers to the Industry and Construction sector, and 16 to the Agricultural and Forestry sector. 2023 was the most heavily invested year with a total of C$ 587,512,032.55. The enhancement in infrastructure included restoration of didactic spaces and cooking workshops, establishment of agricultural sheds and extension of diary plants of fruits and vegetables, construction and equipment of meat laboratories, rehabilitation and equipment of auditoriums and dormitories, installation of irrigation systems and maintenance of sewage treatment systems (INATEC, 2015-2023).

The technical equipment includes the endowment of new instruments, securing the development of professional practices during the learning process. This reinforcement is crucial for students to acquire the essential abilities in an environment of realistic work and updated technologically. The investment in didactical equipment between 2015 and 2023 was C$ 303,632,727.21. Out of this, C$ 82,802,154.16 were destined for the maintenance of approximately 70 thousand equipment in 45 Technological Centers.

Investments in infrastructure and equipment have had a significant impact in quality and pertinence of Technical Education and Vocational Training in Nicaragua. By providing modern and well-equipped learning spaces, students can develop their competencies in an environment that simulates the conditions of the working labor world.

Conclusions

Pertinence and quality of the Technical Education and Vocational Training in Nicaragua display significant progress in 2015-2023, as result of a process of curricular transformation, addressing the demands of productive sectors and needs of the people training nationally. It allowed the continuity and strengthening of teaching skills through their updating and permanent specialization.

It is demonstrated in the growth of the coverage and diversification of the formative offer, to give more attention to men and women from the technological centers, with educational opportunities available in-person, hybrid, b-learning, e-learning, covered through the adequate infrastructure, pertinent physical, financial, and technical resources, contributing to the quality, warmth and inclusion of the different programs and strategies implemented.

Favorable conditions within the National Education System, so that INATEC continues to strengthen attention strategies towards the population, aiming to guarantee quality in technical and technological education, pertinent to the needs of each territory. The outcomes of technical education in Nicaragua align with GRUN's programs and policies presented in the National Plan to Fight Poverty and for Human Development 2022-2026. These contribute to the achievement of national objectives, considering education as a fundamental

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bond in the social and economic development of people, family and community.

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Transdisciplinary strategies for a holistic learning in the UNIAV–UNICAM Program

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Estrategias transdisciplinares para una formación integral en el programa UNIAV–UNICAM

Abstract

The new times in which education is experienced demand a deeper analysis of educational practices, of a more coherent view between reality and pedagogical practice. In this sense, this article analyzes how transdisciplinary strategies can be applied in higher education, highlighting the importance of integrating various disciplines in a holistic and harmonized way to address community problems in a contextualized and practical manner. The Universidad Internacional Antonio de Valdivieso (UNIAV), through the construction of transdisciplinary learning experiences and encounters, generates comprehensive results in its educational context. This has allowed the creation of new knowledge, the promotion of investigative capacity in the social, economic-environmental, cultural realms, and the resolution of complex problems, prioritized within each of the rural communities from which its learners come, from the field of physics and mathematics. In the formative practice, it integrates flexibility and multiple perspectives, knowledge, and approaches from different disciplines in the field of Educational Sciences, fostering citizenship training, practical skills, social, cultural, emotional, personal, ethical, and moral knowledge. In the Education Sciences degrees of the UNIAV-

UNICAM program, pedagogy and methodology that boosts the collaboration between mediators and learners from different disciplines are employed. This article is the product of qualitative research, exploring how physical-mathematical models are created and used to solve complex problems in rural communities from a transdisciplinary perspective. The testimonies of learners involved in this experience highlight the importance of this strategy in generating solutions to specific situations that impact the integral and sustainable development of communities. All this harmonized work was developed from the Pedagogical Academic Horizon of UNIAV, which proposes an educational model based on biopedagogy and pedagogical mediation, where students are the vital protagonists of their learning. This model has a transdisciplinary approach that integrates learning processes, evidenced in the learning experiences lived in the UNIAV-UNICAM Program.

Keywords: transdisciplinary, curriculum, education, biopedagogy, educational mediation.

Resumen

Los nuevos tiempos en que se vive la educación demandan un análisis más profundo del quehacer educativo, de una mirada más coherente entre la realidad y la práctica pedagógica. En este texto se analiza cómo se pueden aplicar estrategias transdisciplinares en la educación universitaria, destacando la importancia de integrar diversas disciplinas de manera holística y armonizada para abordar problemas comunitarios de forma contextualizada y práctica. La Universidad Internacional Antonio de Valdivieso (UNIAV), desde la construcción de vivencias y experiencias de aprendizaje transdiciplinaria, de encuentro común y entramado disciplinar, genera resultados integrales en su contexto educativo, lo que ha permitido crear nuevos saberes, fomentar la capacidad investigativa en el ámbito social, económico-ambiental, cultural y resolver, desde la física-matemática, problemas complejos, situados y priorizados en cada una de las comunidades rurales de donde provienen sus aprendientes. En la práctica formativa la institución integra la flexibilidad y múltiples perspectivas, conocimientos y enfoques de diferentes disciplinas en el área del conocimiento Ciencias de la educación, promoviendo la formación ciudadana, habilidades prácticas, saberes sociales, culturales, emocionales, personales, éticas y morales. En las carreras de Ciencias de la educación del programa UNIAV-UNICAM se trabaja con una pedagogía y metodología que fomenta la colaboración entre mediadores y aprendientes de diversas disciplinas. Este artículo es producto de una investigación cualitativa, que explora cómo se crean modelos fisicomatemáticos para resolver problemas complejos en las comunidades rurales, desde una visión transdisciplinar. Los testimonios de los aprendientes involucrados resaltan la importancia de esta

estrategia para generar soluciones a situaciones específicas que impactan en el desarrollo integral y sostenible de las comunidades. Este trabajo armonizado se desarrolló desde el Horizonte Académico Pedagógico de la UNIAV, que propone un modelo educativo desde la biopedagogía y la mediación pedagógica, donde los aprendientes son los protagonistas vitales de su aprendizaje, con un enfoque transdisciplinario que integra los procesos de aprendiencia, evidenciado en las experiencias de aprendizaje vividas en el Programa UNIAV-UNICAM.

Palabras clave: *transdisciplinariedad. Currículo, educación, biopedagogía, mediación pedagógica.*

Introduction

Higher education faces the challenge of preparing students to tackle complex real-world problems. Transdisciplinarity emerges as an inventive approach, fostering the melodious integration of diverse disciplines to address socioenvironmental obstacles. This article centered on the execution of transdisciplinarity in the Education Sciences' bachelors at the UNIAV-UNICAM program, which aims to develop a Physic-mathematical models to tackle rural communities' problems from where learners are. The study analyzes how this transdisciplinary strategy supports a more cohesive and revolutionary education rooted in solutions as per the reality communities live. Transdisciplinarity in UNIAV higher education is key, precisely because it is in function of generating impact that benefits the communities.

In this light, interaction between the curricular programs and social contexts is vital to renew the learning programs. Hence, this curricular interaction entails a pedagogical interaction we can understand as a teacher's fundamental action helping to promote dynamics and/or educative strategies which

assist student's learning (Zambrano et al. 2019, p. 66). It is apropos to grasp the territories' realities with the goal of inspiring the capacities driving to sustainable human development, fixated on people, families, and communities. To attain it, it is important to consider curricular programs require encounters, conjugations, and convergences between sciences, allowing to transcend to multi, inter and transdisciplinary dimensions, achieving new decisive knowledge to problematics in social contexts.

This research describes a transdisciplinary learning experience at the *UNIAV-UNICAM Program* aiming to interpret the theoretical foundations of transdisciplinary in the pedagogical-curricular practice according to the social contexts where the program is cultivated, allowing to evidence the transdisciplinary action in the curricular academic activities and biopedagogy mediation.

Importantly, UNIAV envisions:

The learning processes approached from the curricular designs, flow into transformational processes to the

Nicaraguan and Central American society, promoting respect for life and Mother Earth, enabling processes of deep changes in the role played by the human being in the planetary ecosystem as a human rights matter, social justice, and peace culture; to achieve contributing to the construction of an organized and prepared planetary citizenship to discern, understand, and reclaim their rights and exercise their responsibilities. (UNIAV, 2019, p. 51)

Epistemological approaches to transdisciplinarity

One of the trials faced by educational systems is finding the absent paradigm, the theorical and epistemological bases framed to the existent phenomenology in which a country develops such that the pedagogical challenges from curricular proposals in the educational subsystems must land the facilitation of ample and deep comprehension of social problems, formulation of the pedagogical curricular theory with cultural, economic, environmental and historical contexts of the territories. Also, they may encourage social inclusion, justice, and, fundamentally, the promotion of competencies based on sustainable human development.

Educational investigator Uribe Agámez (2015) shares: One of the fundamental problems identified in this route is the weak articulation between the pedagogical curricular theory, historical context, and social practice. This premise is rooted in the great existent gap in the educational institutions between the realities of these

ones and what the theory (curricular document) is based on (p. 2).

As a result, educational institutions seek acceptable curricular options that blend theorical integration and development of practical abilities through educative models. It becomes critical for science, through disciplinary, multi, inter, and transdisciplinary exercise, to combine knowledge and methods from different fields, integrating various perspectives and theoretical approaches of learning with social realities, to find answers to the problem in real contexts from multidimensional angles of knowledge.

Transdisciplinary as an inventive and bright approach to take the complex and multidimensional challenges of our time, seeks to outdo the fragmentation of knowledge and enhance the interaction between different fields, with the aim of generating full and substantial awareness of the analyzed phenomena according to their social context. In practice, they present a holistic and collaborative approach, transcending the traditional limits of academic disciplines, boosting collaboration and dialogue between different areas of knowledge. Max-Neef (2004) defines it as: Transdisciplinarity happens when coordination exists between all levels: what exists, what is done, what we want, what we must do, is the merging of disciplines according to its purpose (p. 7). De La Herrán (2011), professor from the Universidad Autónoma de Madrid, stresses: Transdisciplinarity is constant with intrinsic complexity of every natural or social, researchable or teachable phenomenon (p. 295).

Transdisciplinarity mainly excels in naturally ordering organically integrated knowledge from multi-sciences. Synchronously, since their confluence interprets phenomena that science, from their independent activity, doesn't reach, and causes the surge of new knowledge due to resolutive interactions.

It is important to weigh the statement of Romanian physic, Nicolescu (2017), in the *Letter of Transdisciplinarity:*

> Transdisciplinarity is complementary to the discipline approximation; arises the collision of new variables of discipline articulated in-between them; and offers us a new vision of nature and reality. Transdisciplinarity does not pursue the domain of various disciplines, but the opening of all disciplines which goes through and surpasses them. (art. 3, p. 96)

The clues given by Chilean teachers, Rojas Serey and Hawes Barrios (2012), are:

The terms integration, articulation, convergence are used occasionally as synonyms; yet none mean the same. Regarding the curricular discourse, it is necessary to make the appropriate linguistic precisions, namely: (a) Articulation: action and result of building coordination between unities. (b) Integration: conceived as an action component and deriving from the confrontation of a specific problem (d) Convergence: mainly referred to the establishment of sense and comparability (p. 60-61).

Transdisciplinarity has the characteristic of interacting from problems and complex realities (De La Herrán, 2011; Torres & Villegas, 2019; Motta, 2002), from where it seeks to give holistic solutions inherent of an operational and chaining structure of their interactions. One of the nuances of this approach is knowledge inclusivity, allowing them to create solutions to cultural, environmental, and economic realities. This trait between their multi-sciences attains the balance altering inevitably with the contextual whole.

Characteristics

Discipline combination: Transdisciplinarity strives to exceed the traditional limits of academic disciplines and support the collaboration between different study fields. Aims to integrate knowledge, methods, and approaches of diverse disciplines to address intricate problems (Vallejo & Simón, 2023; Nicolescu, 2017).

Holistic approach: It considers phenomena and problems from a global perspective. Strives to discern the nexus and relations between different traits, realizing problems cannot be totally grasped from one discipline.

Collaboration and dialogue: Transdisciplinarity boosts the collaboration and dialogue between experts of different disciplines, plus the participation of non-academic actors, such as local communities or interest groups. Targets to generate shared and collective knowledge (Delgado & Rist, 2016; Luna et al. 2013).

Orientation towards action: Transdisciplinarity pursues to generate knowledge and applicable practical solutions. It focuses on addressing concrete problems and contributing to

sustainable development and society's welfare (Pineau, 2009; Nicolescu, 2019).

Reflexivity: Transdisciplinarity promotes critical reflection of their own taxes, theoretical frameworks and methodologies applied in different educational dimensions. It seeks to question and surpass disciplinary limits, endorsing openness and flexibility.

When to apply transdisciplinarity?

Weighing practical exercise, it is timely to evince transdisciplinarity is preceded by disciplinarities. Hence, transdisciplinarity has two approaches as foyer: foremost is multidisciplinary (Gómez, 2017; Saltalamacchia et al. 2014) the latter is interdisciplinary (Arana, 2001; García, 2017; Gómez, 2017). The first means each discipline adds ideas about various aspects of the problem, identifying and joining different disciplines with independent actions in their segmented work and without internal connections. The second is the group of disciplines associated with certain exchanges. Facilitating spaces to dynamically grasp the phenomena, with interactions between disciplines, generating new knowledge. Yet, when results exceed multi-interdisciplinary outlooks, we face a transdisciplinary dimension. Though usually multidisciplinarity and interdisciplinarity are customary academic exercises.

Transdisciplinarity primarily engages the knowledge, coordinating and connecting all sciences, enabling to organically consider the set of sciences, and integrated disciplines relatively, able to interpret the contextual phenomena. Nicolescu (1996) asserts transdisciplinarity is based on three main postulates applied in their methodology:

→ Affirm the existence of various reality levels.

→ Reaffirm the logic of the included disciplines.

→ Consider the complexity of the disciplinary union.

Moreover, Nicolescu (1996) claims the successful transfer of methods of one discipline to another, could flow into the creation of new disciplines (Botello García, 2015, p. 18). Morin (1984) considered transdisciplinarity must have the sense of reunion between disciplines that involve exchange, interaction, and cooperation (Pañuela Velásquez, 2005, p. 66).

Finally, for Pérez Matosi and Setién Quezada (2008):

→ Transdisciplinary exceeds the limits of interdisciplinarity.

→ It aspires to surpass the fragmentation of knowledge.

→ Eclipses pluridisciplinarity and interdisciplinarity.

→ A process according to which the limits to individual disciplines are transcended to study problems from multiple perspectives with the goal of generating knowledge.

→ It is an approach, not a discipline.

→ Process to increase knowledge through integrating and transforming different gnoseological perspectives.

→ Interested in the dynamic that produces the simultaneous action of various levels of reality.

→ Nourished by disciplinary investigation, clarified in a new

and fruitful manner through transdisciplinary knowledge.

The great stele of transdisciplinarity results transcend all disciplines, creating new disciplinary perspectives.

Materials and methods

This research is qualitative, assuming an interpretative epistemic perspective. The first stage was achieved from the analytic-synthetic method (López Falcón & Ramos Serpa, 2021), an update of curricular documents of UNIAV-UNICAM's degrees, and executed a regional exploration about journal articles in academic databases of indexed scientific publication. Additionally applying the interview method (Gómez Rojas & Cohen, 2019), leading actors, meadiators and learners' experiences of UNIAV-UNICAM program were explored..

Transdisciplinary learning experiences at UNIAV-UNICAM

Shared transdisciplinary learning experience has been lived in the careers of Education Sciences at Universidad Nacional Antonio de Valdivieso (UNIAV) and the emblematic program of University in the Countryside (Universidad en el Campo, UNICAM).

In 2022, UNIAV launched a new academic offer in Education Sciences with four bachelor's degrees: Hispanic Language and Literature, Physics-Mathematics, Social Sciences and Natural Sciences, delivered in a semi-presential modality. The first three semesters (first and second year) listed a collective of 30 mediators of different specialties as the 83 % (25 of these hourly), the registration of new

entrance this period was 268 students; 75 % women and 25 % men, coming from rural communities of ten territories from Rivas, Southeast of the country, and Caribbean Coast, unfathomable places in former times that could not access integral, human, and quality higher education regarding its cultural, ethic and environmental surroundings.

Curricular designs for these degrees are arranged based on a Competency Model under a new approach of integrality, quality, and practice from knowledge. It specifies professional competencies, while unifying objectives, transversal by level and year allowing to outline the different vertical, horizontal, integrators and transversal axes. A study plan structuring different axes, components, hour allotment, and credits marking the disciplinary degree axes (basics, professionalizing, electives), including the vital permanent investigation process.

A detail in the collective performance from mediators to learners in these Education Sciences degrees has been authentic integrality in the interweaving and unification of knowledge (conceptual, procedural, and attitudinal), verifying a capacity of self-organization, shared leadership, and joint decision-making; this condition enables us to own the vertical and horizontal curricular tasks and work under an individual and collective multidisciplinary, interdisciplinary and transdisciplinary dynamics.

UNIAV, from its epistemic gaze to biopedagogy and pedagogical mediation, asserted in its Institutional Project (Proyecto Educativo Institucional, PEI), and Pedagogical and Academic Horizon

(Horizonte Pedagógico y Académico, HPA) allows us to live a collective knowledge experience. Thus, semester teaching groups appropriating our references, and curricular designs from their specific degrees to grow the necessary competencies required by professional and citizen performance were created, being able to imbibe and live them on the pedagogical practice daily life in the integrated planification of the assessment periods, individual biannual Planification, action guiding principles (Bases Orientadores de la Acción, BOA), Rubric, Didactical Action Planification, and Integrated Guide of Self learning.

Integrated view of the educational formation in UNIAV

For physics-mathematics models creation, mediators and learners articulate six components. This common and harmonized encounter learning experience between disciplines generate integrality in UNIAV's academic setting, allowing to create new knowledge, promote research capacity in the social, economic-environmental, cultural area and solve from physic-mathematic complex and contextualized issues in each one of the rural communities from where learners originate; integrating flexibility, multiple perspectives, knowledge and approaches to different disciplines, including: physics, mathematics, language and literature, office automation, biology, and earth science, provoking practical abilities, social, cultural, emotional, personal, ethic, and moral knowledges.

Transdisciplinary learning experience is set in one of the four Education Sciences degrees, Physics-Mathematics has

been chosen –its second semester, first year, Integrator two product, the components are six (Written expression, Office automation, Euclidean geometry, Calculus I, Particle mechanics that give an output to Integrator II), belonging to four disciplines: Language and literature, Informatic, Physics, and Mathematics.

Prior to each semester, the teachers' collective is trained about practice, integrated pedagogical planification where six mediators are gathered, pedagogical consultancy and coordination of careers, who, from a collective-synergic work, in a dialogue of knowledge, study, meditate, and agree, from their fields, the contents exhibited to the Integrator. This input enables the articulation and harmonization success of three holistic actions proposed in the component's program:

→ Search of problem tied to physical-mathematical models

→ Approach problems and hypotheses

→ Model construction, report creation, and results disclosure

Semestral planification is led by the Integrator in synergy with mediators, sharing the semester components: Written expression, Office automation, Euclidean geometry, Calculus I, Particle mechanic, Integrator II, considering competency level (generals and specifics), objectives (year and level) and knowledge required to develop the transdisciplinar integrator product, consisting on the "Construction of Physics-Mathematics models". As stated above, mediators raise transdisciplinarily: the integrated biannual matrix in which main contents are defined, whereby is possible the disciplines' engagement for

the creation of the integrator product; each mediator proceeds to delimitate their curricular components.

Therefore, the BOA is built, wherein a consensus, mediators recognize the point of disciplinary fusion for the inception of transdisciplinary formation of the integrator product, inception from simple to complex. Likewise, the learning assessment rubric is collectively designed, describing the domain grades built by learners in their learning process, considering competency dimensions.

Regarding the existent problematics in different communities from where Education Sciences protagonists come from, Physics-Mathematics learners in their integrator product raise solutions to problems related to particle mechanics. We consider learners from Isla de Ometepe —Rivas, Nicaragua— who propose, as a study particle the garbage collection truck.

To guide learners' transdisciplinary construction of knowledge, the Integrated Guide of Self-learning (Guía Integrada de Autoaprendizaje, GIA) was created. In it, the management of residues in Altagracia, Isla de Ometepe was a problem generator, where learners integrate different disciplines growing their capacity to identify the particle in movement (garbage collection truck), aiming to design a physic-mathematical model representing the trajectory of the garbage truck in the urban center of Altagracia (August-October, 2022).

Transdisciplinarity, product of the dialogue between learners and collective construction of knowledge, is lived through investigation itself, combining all disciplines that enable achieving the integratory actions of products built in every semester. Firstly, it is clarified what each discipline, from curricular flexibility and coherently providing the construction of the integrator product, where knowledge is attested. Thus, the internalization of competencies and objectives, addressing the pedagogical and academic daily work is essential.

Affective and effective communication of the learning community's members is vital to attain the integration of all components in the integrator product, BOA and rubrics, including assessment instruments and feedback, providing information and scopes of each discipline. Namely: Particle mechanics require a deep study of higher order derivatives to calculate the speed and acceleration. Similarly, Euclidean geometry is needed to model the platform of the garbage recollection truck and, the volume and capacity it must collect of all the deposited waste in the destinated spaces by the city hall of Altagracia.

The particle in movement entails the interpretation of all calculations made. For this, learners revert to written expression for writing and technical substantiation of the results obtained. It is crucial to mention office automation contributes as a technological tool to research, conduct the texts survey, video editing crucial to log, enhance, and exhibit the integrator product built in the community, and APA style to grant a suitable and clear record to the pedagogical requirements in the product creation.

Transdisciplinary learning experiences

On a community level, the transdisciplinary proposal, crafted by learners, was directed

from academic design for the community contribution, stirring the interest of territorial authorities to attend the management of solid residues, besides the sensibility, preoccupation, and compromise from an integral social gaze of alliance with the rest of institutions involved in the problematic, including: Ministry of Environment and Natural Resources (Ministerio del Ambiente y de los Recursos Naturales, MARENA), National Forestry Institute (Instituto Nacional Forestal, INAFOR), Ministry of Health (Ministerio de Salud, MINSA), MINED, National Police, leaders and territory politics.

Hereinafter, some learners' shared experiences are intertwined together.

Keybel, from Altagracia-Isla de Ometepe, a learning community protagonist, shares:

"To create our integrator product, it was important to organize ourselves as a learning community, according to our origin community. Then, it was important to observe the problematics of our community and dialogue with territory authorities and villagers" (K, personal communication, September 25, 2023).

Likewise, Junior, also Physics-Mathematics protagonist, declares:

"Contextualized learning granted us the opportunity to stimulate and research to submit solution alternatives, addressing the current concerns in Altagracia. It was a delightful experience for us. The synergy and application of what we learned in varied components mattered, aware we could propose a real alternative from complexity" (J, personal communication, September 25, 2023).

According to our discussion, learner Félix shared:

"The interactions with actors of our community were superb, see how we could apply all our components to reality. We saw the community motivated because they felt we could propose an alternative that could be heard" (F, personal communication, September 25, 2023).

To the question of, if they perceive transdisciplinarity, Keybel commented:

"Transdiciplinarity is gained from the time we align, network through all disciplines to build a final product. We have learned to merge all abilities from deep knowledge, until we find meaningful knowledge for our lives" (K, personal communication, September 25, 2023).

Finally, Junior mentioned how they lived the interrelationships with different actors:

"We went to City Hall and urbanism accompanied us. We socialized and did not feel a contrast between being from Physics-Mathematics and him being an engineer as we were all invested in presenting a real alternative" (J, personal communication, September 25, 2023).

Results and discussion

The learners' experiences display transdisciplinarity as an important educational approach. The melodic integration of diverse disciplines to address local issues in a pragmatic and relevant way is proved in the experiences Keybel, Junior and Félix relate. These unveil the answer to a problem raised by Uribe Agámez (2015): the value of uniting pedagogical theory

with historical and social contexts. Max-Neef (2004) depicts transdisciplinarity as a tool beyond the combination of disciplines, and offers real solutions from complexity, deriving in a complete and deep understanding of studied phenomena in their social context.

Learners' stories, from the UNIAV-UNICAM Program, on light of these experiences not just prove transdisciplinarity, moreover support their role as drivers of a more contextualized, inclusive and focused education in real solutions.

The creation of physical-mathematical models displays transdisciplinarity by enabling the alliance between mediators and learners in diverse fields to solve complex and contextualized problems. The creation of new knowledge and practical abilities is boosted by the interplay of fields such as physics, mathematics, literature, office automation. Likewise, the experience exhibits an integrated pedagogical planification, enabling the evolution of transversal competencies and settlement of real problems in rural communities, contributing to integral and sustainable development of regions from UNIAV's contribution.

Conclusion

By promoting collaboration, integration, innovation and dialogue between different specialties, transdisciplinarity is a cognitive practice, transcending limitations of traditional disciplinarity. With this integration, complex and contextualized problems can be addressed and urge an integral comprehension of the social realities.

To tackle local problems pragmatically and contextually, it is fundamental to have a balanced disciplines fusion. Keybel, Junior, and Félix's stories reveal the value of connecting pedagogical theory with historical and social contexts, stressing the importance of a more inclusive education, focused on solid solutions.

The experiences learners live in UNIAV through transdisciplinarity has allowed them to build an innovative physical-mathematical model, contributing to improve the collection truck's travel time to hasten the process and provide greater coverage to other community sectors, going beyond economic impact since it is a social and environmental matter, allowing to improve and enhance the utility of this disciplines woven in attention to real problematics they live, is part of a creative and innovative learning for life.

The backbone of transdisciplinarity is the experience of designing physical-mathematical models, where it was shown the diverse synergic collaboration between mediators, learners, territorial authorities and community. It surpasses disciplinary limits and cultivates transversal abilities to solve problems in rural communities. UNIAV acts as a transforming agent and greatly contributes to integral and sustainable development of communities.

Transdisciplinarity is a full system of knowledge and learning, transcending daily practice and offers solutions to community's problems. The integrator product displays how diverse disciplines work together to create concrete and contextualized situations, exhibiting the

transformative power of transdisciplinarity in higher education.

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Challenges and opportunities of cultural diversity in intercultural learning environments

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Retos y oportunidades que representa la diversidad cultural en los ambientes de aprendizajes interculturales

Abstract

This essay was elaborated based on the socio-cultural realities experienced in schools and the diverse learning environments in the Nicaraguan Caribbean Coast. The methodology is qualitative and descriptive in nature, aiming at a critical and objective reflection on the main challenges and opportunities involved in the attention to cultural diversity from an inclusive education with an intercultural approach, through the analysis of the implementation of didactic strategies that include the protagonism of the family, student, teacher and community. Also, it is demonstrated the importance of the curriculum as a tool for orientation and construction of knowledge and scientific knowledge that integrates the cosmogony of each Miskitu, Sumu-Mayangna, Creole, Garífuna, Ulwa, Rama and Mestizo Caribbean people. In this paper, the role of the teacher as a facilitator in the evolving context of education in Nicaragua and its transcendence in the attention to cultural diversities present in learning environments, as opportunities rather than threats for the implementation of quality education for full human development is discussed.

Resumen

El presente ensayo se elaboró con base en las realidades socioculturales que se viven en las escuelas y los diversos ambientes de aprendizajes en la costa caribe nicaragüense. La metodología es cualitativa de tipo descriptiva, apuesta por una reflexión crítica y objetiva sobre los principales retos y oportunidades que conlleva la atención de la diversidad cultural desde una educación inclusiva con enfoque intercultural, mediante un análisis de la implementación de estrategias didácticas que incluye el protagonismo de la familia, estudiante, docente y la comunidad. También, se evidencia la importancia de la currícula como herramienta de orientación y construcción de saberes y conocimientos científicos que integra la cosmogonía de cada pueblo miskitu, sumu-mayangna, creole, garífuna, ulwa, rama y mestizo costeño. En este texto se discute el rol del docente como facilitador en el contexto evolutivo de la educación en Nicaragua y su trascendencia en la atención de las diversidades culturales presentes en los ambientes de aprendizaje, como oportunidades más que amenazas para el desarrollo de una educación de calidad y el desarrollo humano pleno.

Palabras clave: diversidad cultural, educación inclusiva, educación intercultural.

Introduction

Cultural diversity on learning environments reveals challenges and opportunities to the teaching methods on Nicaraguan Caribbean Coast intercultural contexts, a sociodemographic space where Miskitu, Sumu-Mayagna, Rama, Creole, Garifuna, and Mestizos coexist. The analysis of current pedagogical practices exhibits strategies and didactic mechanisms, engaging the attention to cultural diversity in the classrooms. Moreover, the curriculum, as guide, explicitly discuss didactic strategies to promote intercultural education epistemology as base for the attention to students' cultural diversity.

Cultural diversity infers a part of protection and promotion of existent cultures is a mainstay for sustainable development; linked to people and societies' identity (UNESCO, 2005).

Conserving education and shielding the existent sociocultural manifestations on the Nicaraguan Caribbean learning environments must be a main challenge. Intercultural classrooms ought to be spaces of free expression, encouragement of values and respect to the diverse cultural manifestations promotion, noting how cultures change and are dynamic displays —they waver based on the behavior of individuals who integrate them— stressing

current learning environments presume a major pedagogical and didactic challenge for our teachers, since cultural diversity on schools symbolizes a complex socio-educational phenomenon where social, linguistic, and cultural factors influence to offer a response to main challenges and assert the learning opportunities existent in it.

The noesis of intercultural education ought to begin from the exposure of diverse cultural manifestations existent in classrooms, through the addition of ancestral knowledge and skills of each student. Regarding this, Vilá (2012, cited in Arias-Ortega, 2019) indicates sensibility refers to building acceptance mindsets to others regarding their social, cultural, spiritual, cognitive, and linguistic differences from actors on the educational and social medium; equally, aims for intercultural communication as a tool for learning the linguistic and cultural codes, properly relate with people belonging to different societies and cultures. The learning promotion is the recognition of various cultures, using pedagogical, methodological, and scientific strategies to contribute to the dialogue, articulation, approval of the other as legitimate and the respect practice between diverse villages.

The work presents a qualitative analysis around the main existent challenges and opportunities in learning environments with cultural diversity. It is verified data obtained of meaningful and relevant testimonies confirming the existence of a wide cultural diversity on learning environments and some efforts made to assist this situation and produce quality learning for the promotion of full human development from interculturality.

Cultural diversity on intercultural learning environments

Interculturality is a topic of wills and a pending subject within most of the Latin American educational systems, as peer dialogue and on par, often means sharing spaces of decision-making, hindering, if not impossible. Some social actors tend to relate the term interculturality with equity, others interpret it as mutual respect between different cultures.

The idea of interculturality is applied broadly, not only by researchers of other fields, but also by other types of social agents across diverse contexts. It alludes to various types of relations and articulations, including both collaboration and conflict, established between them as social agents which cultural differences shape their interactions (Mato, 2018).

To analyze this concept, it's vital to understand the attention to cultural diversity on learning environments of Nicaraguan Caribbean Coast schools must begin from an integral and human rights approach, through the construction of equitable relations between students, teachers, families; including on the processes of leaning historical, social, cultural, politic, economic, anthropological, environmental elements, among others.

UNESCO (2005) defines cultures as: the set of distinctive spiritual, material, intellectual, and affective traits that characterize a society or a social group. It encompasses, also, the arts and letters, ways of life, way of living together, value systems, traditions and beliefs (p. 14).

Coherently with UNESCO's approach, we can discern culture as inherent to each person and as a right that cannot be erased or denied in society, because it is the various manifestations and specific patterns of each individual or group of people in front of determined situations.

Teachers in the Nicaraguan Caribbean Coast schools, who attend students from various indigenous groups and cultures in learning environments, must be equipped to clearly identify the socio-cultural factors and manifestations depicted by each student according to the village they belong to; also, the curriculum as pedagogical tool must provide the epistemological, didactical, and pedagogical aspects to enhance the attention to cultural diversity, such as the learning-by-doing approach, on the everyday coexistence.

Nicaraguan Caribbean Coast classrooms are spaces where the cultural and linguistic diversity with Miskitu, Mestizo, Rama and Creole students is palpable. Ergo, us teachers must apply socio-emotional education, without acts of xenophobia, adoption of stereotypes, exclusion, and other manifestations which do not contribute to the attention towards interculturality (personal communication with Creole teachers, Laguna de Perlas, November 1, 2023).

The definition of culture is intricate due to the wide scheme of concepts and views. Yet, Fernando Poyatos (1994, cited in Casal, 1998) points out: Culture can be defined as a series of shared habits by members of a group living in a geographical space, learned, but biologically conditioned, as in means of communication (which language is the base of), relations on diverse levels, different daily activities, products of the group and how they are used (p. 465).

We can mention how culture is not an inherent characteristic, rather an active and continuous process in society. Thus, we must grasp how culture allows to merge multiple and complex manifestations, practices and adoption of other cultures, so we cannot fathom it as something closed and static, but in constant creation and reconstruction, acquiring other cultures' conducts and tied to social change, building of personal and cultural identity. We must learn to live collectively to understand the dynamics of social groups and each village. It is what makes learning cultural identities of man and women from the educational endeavor with a flexible and relevant pedagogy interesting.

Culture plays a role in social harmony, self-esteem, creativity, historic memory of every individual on the social web, given culture is related to the intellectual or spiritual development of an individual, consolidating their personal, social and national identity, belonging to an original Miskitu, Sumu-Mayangna, Garifuna, Rama, Creole, or Mestizo village as they live on the Nicaraguan Caribbean Coast.

Current educational contexts pose one of the main challenges for teachers, as cultural diversity is a complex socio-educational phenomenon influenced by a diversity of factors. On the presence of students' cultural diversity in the classrooms teachers oversee, frequently overflowing with a complex reality, which generally does not have adequate pedagogical and didactic resources. However, teachers' work is always chastised by society and stress on the minimal training they have on this matter, leading to their

tasks depend more on the attitude towards cultural diversity than a true policy of teacher training (Verdeja, 2018).

The multicultural society on the Nicaraguan Caribbean Coast is reflected in our classrooms, where Miskitu, Sumu-Mayagna, Rama, Creoles, Garifunas and Mestizo students attend and coexist, each with their own characteristics and socio-cultural manifestations, complicating teachers' work to propitiate essential attention and pertinence, in relation with each cultural factor affecting the learning environment. However, pedagogical and didactic attention to diversity poses challenges and opportunities to the educational system and teacher, to understand the reality from students' gaze as main protagonists of their learning and socio-cultural coexistence, to apply didactic strategies with intercultural pertinence.

The need of working emotional and intercultural competencies on processes of teacher training become more binding. Thus, the curriculum as pedagogical tools must address the interests and perceptions of the teacher, student, and families facing cultural diversity in classrooms. The extent of students of other cultures and languages' presence on learning environments propitiate quality learning and full human development and produce a peaceful and democratic cultural exchange.

Echeita (2006, cited in Peinado, 2021) highlights: Diversity refers to what makes us different according to personal, physical or cultural characteristics (p. 83). Evidently, cultural diversity is present in classrooms and learning environments nowadays. A basic query is: our teachers on the Nicaraguan Caribbean Coast have the training to attend this cultural diversity? This implies considering a revision of continuous teacher training and education's contents in intercultural coherence and continuous education.

> As teachers, we have been noting that, on the Inter-learning Pedagogical Meetings (Encuentro Pedagógicos Intersemestrales, EPI), developed each month by the Ministry of Education, most shared contents have a monolingual and monocultural pedagogical cut, therefore not guided to the approach of didactical strategies attending students' cultural diversity in the Caribbean. (personal communication with Miskitu teachers, Bilwi, November 15, 2023)

The curriculum as tool of principles and features' declaration of an educational purpose and connection between culture and society, knowledge and new knowledges, theory and practice in certain conditions. It must have factors as the history of the people's fight to win their freedom and national sovereignty, as well as the rescue of the cultural historic memory of the villages, recognizing and valuing the knowledge and expertise of cultural diversity on identity formation as measure of human development in our villages.

According with informants, the curriculum must contain:

> The bases of science, technology and accumulated knowledge in our indigenous and afro-descent cultures about the concept of preparation for life, intercultural approach based on rights and intersectional analysis,

honor and promotion of territorial administration system with its own leadership on a communal, territorial and regional level entails the evolution of culturally differentiated villages' identity. (personal communication with the principal of an intercultural school, Bilwi, November 8, 2023)

We cannot continue creating tradionalists social schemes for learning processes. If our education places human beings as active subjects at the center of learning, education must attend cultural diversity and reciprocal relations between protagonists on learning environments. "When a student respects and values other's culture, they use horizontal dialogue, solidary, implement values, fellowship. It is then when we are on the road of an inclusive education in diversity" (personal communication with teachers of education, October 25, 2023). This denotes superior or inferior cultures do not exist, neither higher than the other; each culture adds their interaction to the sociocultural diversity of society.

Some teachers, despite being familiar with intercultural education in their professional education, do not apply theory in the practice in their respective centers; also, continuous learning in this field is very limited, there are no practical guidelines for teachers to have extra support to address cultural diversity on classrooms and scholar context. Another element to be analyzed is the absence of specialized pedagogical accompaniment processes, enhancing the attention to cultural diversity with support of didactic strategies in classrooms. (personal communication with teachers of education, November 12, 2023)

García (2012) explains teachers point out the absence of clear criteria to assist cultural diversity on classrooms, so each teacher tries what they can and is within reach, as the performance on the classroom depends, greatly, to the will of teachers and their implication with the topic.

Since 2007, our schools on the Caribbean Coast have created a curriculum for Bilingual Intercultural Education. This required a process of curricular update and evolution, reflected through guidelines, pedagogical and didactic competencies applied to attend all factors and traits of cultural diversity from its epistemology embodied on the intercultural classroom.

Attention to cultural diversity does not have to be a process of uncertainty for teachers. In many cases, they catalogue students, meaning, when a teacher sees a student of dark skin and curly hair, immediately thinks they are creole, without knowing their interests, preferences, customs, and other cultural manifestations. This turns out to be undeserving and unjust, as they are prejudging students, which is counterproductive and leads to making wrong judgements at the time of pedagogical, emotional and integral attention.

Olvié (2009) marks the episteme, as a notion, alludes to knowledge, either to knowledge or a way of labeling science and defines the conditions of possibility of all knowledge, a way of structuring it on words and things. It is as a history of not properly growing perfection, but as conditions of possibility internally in this space of knowledge, the configurations giving place to diverse forms of empirical knowledge.

UNESCO (2005, p. 6) state: the own diversity in society is present in school, although not all teachers feel secure with it. Rather, they find it intricate and ominous. Developing relations of symbiosis, equity, and trust can, however, transform diversity in a learning opportunity and cultural enrichment.

One of the sources refers:

> Interculturality must not be seen only for students of indigenous and afro-descendant villages. It concerns all students in all educational modalities, since we must prepare them for today's societies, be it the Caribbean Coast or the rest of the country, now multicultural in all aspects. (personal communication with the principal of a school, Bonanza, November 6, 2023)

Costa (2002) states many students identify with the sociocultural group they belong to and allows them to have certain identity with their context and culture. However, occasionally, lack of cooperation with other groups creates rivalry between them, leading to discrimination as a of power and domination, situation whereby the coexistence turns educational processes convoluted.

In our schools, scenarios of coexistence are heterogeneous for the presence of Creole, and Mestizo protagonists; Miskitu, Mayagna, and Creole; Ulwa, Miskitu, and Mestizo, among others. This rich representation and diversity of villages entails challenges and obstacles from the pedagogical, emotional and phycological attention, not falling into separatism or tribalism, unfair competition, and exclusion. Diversity must be seen as an opportunity

to generate meaningful and pertinent learnings to each culture present in the classroom.

For teachers, classrooms must be set with illustrative aspects representing cultural diversity. (Personal communication with teachers, November 5, 2023). Equally, they bet on pedagogical practices in schools with cultural diversity to allow a knowledge flow and contributions of each culture on the formation of society, generate reflection processes of pedagogical work in the classroom and, strategies to boost and integrate knowledge and building works for a holistic and hermeneutic creation of sociocultural reality bases.

Opportunities on the attention to cultural diversity on learning environments

Díaz & Vargas (2022, cited in Lalinde & Arroyave, 2022) convey intercultural education as a horizontal and dialectic exchange between western and non-western knowledge, an acknowledgement of epistemological character wisdom of villages starting from a complementary relation between body/nature and mind/reason (p. 100).

Cultural diversity in our schools and learning environments, nowadays has a higher quantity of protagonists from villages of our Nicaragua, especially in the northern and southern Caribbean Coast. This multiculturality defines our societies in all the country, molded mainly by the phenomenon of internal migrations, connectivity and accessibility with the development of road systems, and the media incidence, which present advantages and opportunities for the attention to interculturality in education.

Schools should not be a space where exclusion, xenophobia, and discrimination are normal. Lawrence-Brown & Sapon-Sheving (2015) state multicultural educational spaces have been a privileged space to display and replicate the ethnocentric and monocultural roots of our education systems, plus the input of these to maintain social inequalities expressed in school.

The school is a place of imitation of sociocultural manifestations, but also possible to work new relations, rehearse interactions, divert conducts and learn to recognize cultural diversity richness, starting from the student's own knowledge and manifestations. Learnings on intercultural environments must start from prior knowledge and skills, history, forms of social organization.

Regarding strategies and tools to facilitate the learning process, Rodríguez (2022) reveals: Pedagogical mediation for us is a highly important alternative of strategic and methodological accompaniment.

I consider that, in this process of Nicaragua's educational transformation, us teachers are learning to be mediators. Students are builders and protagonists of their own knowledge, and teachers must facilitate access to information, data bases to acquire knowledge and transform them in relevant mastery for life so these learnings are useful to solve a situation. Pedagogical mediation takes us to mediate the content, it must indicate to us the form in which the information must be developed for the student to benefit from it and, therefore, be the protagonist of their own learning (p. 165-166).

Of course, in our Nicaraguan educational system and thanks to public policies, the curriculum is exonerated of banning educational practices promoting uprooting and other manifestations such as xenophobia and racism. The merit is how our teachers vastly are from the Caribbean Coast and know the sociocultural manifestations of the villages inhabiting it, although they do not have the oral or written domain of the native languages. This enables them to engage with students in various leaning environments.

Jiménez & Lalueza (2017) points out: when the activity systems allow their members to bond curricular contents to their cultural references, when team collaborations are favored as they aim towards common goals and educational help are tailored to students' needs, opportunities of student success are widening, and barriers for learning and participation are erased. (p. 10)

> Likewise, if schools do not have evidence of practice continuity and cultural markers of home, the curriculum and learning environments tend to reinforce academic failure.

Though a sociocultural lens of understanding the psychological and its relationship with learning processes, Vigotsky (1978, cited in Lawrence, 2015), mentions culture and situated nature of students' prior knowledge are a key factor for learning. This is placed in a special space of learning processes which supposes understanding them as inseparable from students' cultural heritage and inheritance, their families and communities. Connell (1977) mentions through the analysis of an inclusive model of educational innovation empirical data is provided for the discussion of processes

Main theme: Challenges and opportunities of cultural diversity in intercultural learning environments

design as culturally and socially pertinent for teaching and learning.

The pedagogical practices contribute to the heed of cultural diversity on classrooms must start on prior knowledge, experience diverse cultural manifestations and their relation with science and new knowledges, without losing sight of the mother tongue use as part of communication with social pertinence. Our educational system must have collaboration spaces between diverse social protagonists, can add cultural elements of the curriculum and avoid reproduction of curricular documents created from a desk or diverse ministries and educational subsystems' headquarters. Likewise, one of the opportunities our educational system has is the non-separation of students by categories, capacities, sociocultural origin or native villages and afro descendants, expressions to increase the inequality gap and educational exclusion.

A central idea of inclusive education is assuming educational difficulties so certain students experiencing it do not lie in personal and internal conditions, requiring special attention, rather the difficulties that students face in their academic experience relate to barriers for learning and participation not implicitly or explicitly installed for the act of the school and its academic culture (Booth & Ainscow, 2022).

The approach of inclusive education with sociocultural and linguistic pertinence in schools of the Caribbean Coast, stems from the knowledge of each sociocultural manifestations of the students on the learning environments. Guitar & Moll (2014) point out the role played by knowledge creates inside the classroom definitive

for inclusion, as they not only allow to give logical and phycological significance to curriculum's contents, rather give continuity and cultural pertinence to learning, and use of knowledge, students, family and community' engagement. Thus, each protagonist's culture adds to erase or reduce breaches and barriers to generate meaningful, pertinent and inclusive learning on the educational system.

An inclusive education supposes the implementation of educational experiences with sociocultural pertinence. It is worth stressing it is transformed and adapted to the needs and requirements of students, blurring the principles of homogeneity and educational standardization under which students are adapt themselves to the curriculum's logic (Onrubia Goñi, 2009).

Odina et al. (1999) expressed the centers properly fitting the intercultural model are defined by using a multidisciplinary approach in the program's design and application, drawing local community resources, practice teaching formulas including heterogeneous grouping, mutual help, peer learning, self-learning; fight discrimination and racism stressing on contemplating myths and stereotypes; develop social abilities, promote norms reflecting and legitimizing cultural diversity; apply proceedings of diagnosis to avoid discrimination from the application of standardized tests.

It is expected every student can access equally, but not uniformly to new learning expected by the school, in a framework of respect in diversity, inclusion without discrimination with opportunities as the classroom setting where cultural aspects are evidenced, participation of local actors and family's integration.

Nevertheless, the heterogeneous and flexible itineraries of learning exhibit their maximum potential when it comes in hand with the delivery of adjusted educational activities by the teacher, able to connect with students' characteristics and specifical needs. These activities allow for each student to build their own learning trajectory, the teacher as the one in charge of guiding this process to new zones of proximate development (Besalú & Vila, 2007).

The attention to the opportunities presented in classrooms with cultural diversity displays how inclusion not only seeks to offer learning equal opportunities for all students, but to visualize school as a space to equalize positions of the different groups students belong to, removing learning inequalities some students face for belonging to the Miskitu, Sumu-Mayagna, Creole, Rama or Garifuna indigenous villages.

It is clear the engagement of the teacher in their pedagogical labor, as well as their interest or each student' needs as an individual than as part of a certain cultural group. However, most teachers lack training to assist culturally diverse students and fall short of didactical-organizational strategies enabling to get good results with students (Odina et al. 1999).

Challanges reflecting the attention to cultural diversity in learning environments

Rodríguez (2004) stresses we cannot ignore we live in a changing world and school cannot stay impassive. The change and its speed are key elements for the future, an essential change is established by cultural diversity manifestations. The

new society raises hurdles and obstacles, seeks drastic and deep changes affecting the educational systems and formal education (p. 3).

Currently, diversity is the norm in all classroom environments. Therefore, if the norm is diversity, where every educational must begin, realistic and contextualized approach in our Nicaraguan Caribbean Coast schools. It is essential to consider the beginning of cultural diversity in schools and consider tangible contributions for the family and community in the structuring of our educational system with scientism and sociocultural pertinence, if an appropriate answer is given to indigenous population and afro descendant who coexist in the Nicaraguan Caribbean Autonomous Regions.

> Our schools will have certain autonomy levels regarding the process of curricular adequation on diverse learning spaces, where it is manifested and evidence cultural and linguistic aspects in all moments of educational and learning practices from the harmonic coexistence and attention to diversity, integrating cultural practices for the family, person and community, from a pedagogical approach, adding value to the learnings from cooperating amicably and peaceful environment, adding transformation and full human development. (personal communication with students of education, November 25, 2023)

The use of Arts and culture workshops" spaces (Talleres de Arte y Cultura, TAC) in theater schools in coordination with the municipality, parents, where cultural

elements diversity is promoted (traditions, foods, values, customs, chants, myths and legends), as well as using the mother tongue and other official languages as an inclusive pedagogy is essential. Moreover, the development of talks, collaborative workshops with participation of wise men, elders and knowledgeable people of each village's cultural manifestations (personal communication with teachers of education, November 15, 2023).

Likewise, the development of parents' schools is advised, but functionally to exploit and evidence the potential of family's knowledge on the curricula, as well as collective meetings with the participation of students, teachers, families and community leaders. Equally, an activity with good results should never be missing in learning spaces is the tutoring with diverse protagonists in the classroom and community.

Another challenge is leveraging the Information and Communication Technologies (Tecnologías de la Información y Comunicación, TIC) to address cultural diversity from the curriculum. TIC's must facilitate didactics allowin the development of abilities for life and socialization with other cultures in the learning environments. "The infraction of TICs usage in our Caribbean Coast schools is more distinct than on the rest of the country, but it must not be an obstacle to use discretely" (personal communication with teachers of education, November 25, 2023).

Counting with two teachers in a group of class is essential, so they can give individual attention or organize heterogeneous work groups, apply methodologies to imply the support of own peers from other cultures on learning or problem resolution, the inclusion of parents in certain moments of the scholar schedule or flexible hours, so students who need it can go to reinforcement classes in some hours of the scholar period.

The curricula as tool must reflect aspects as: a) History of people's struggle and rescue of historic cultural memory; b) Recognition and assessment of knowledge and skills of cultural diversity on the identity creation and belonging; c) Bases of science, technology and accumulated knowledge in our indigenous and afro-descendant cultures from the concept of preparation for life; d) Intercultural approach from a rights-based approach and intergenerational analysis; e) Respect and promotion of a system of territorial administration with their own way of government on a communal, municipal and regional level.

It must be developed processes of pedagogical accompaniments with clear intentions and purposes, reflecting attitudes and actions to enhance interculturality from the reinforcement of individual and collective rights of students, along the identity and education for full human development with quality on inclusivity rooted in diversity.

Learning evaluation must show aspects of incorporation and manifestations practice of cultural diversity in all areas of life, promotion of values and intercultural competencies, processes evaluation of construction and reconstruction of new knowledge and skills referred to intercultural aspects of villages.

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Conclusions

Rather than weighing up the implications of attending cultural diversity on Nicaraguan Caribbean Coast schools against the approach of an intercultural education. The reflection revolves around the analysis of pedagogical factors to help reducing gaps persisting on learning environments' cultural aspects.

Changes on paradigms and way of teachers' designing pedagogical practices, it should promote meaningful and relevant learning of cultural diversity attention. Thus, increase scholar success and implementation of visibility of manifestations and practices of inclusive education of the Nicaraguan Caribbean Coast intercultural learning spaces.

The curricula as a tool must contribute pedagogical and didactic strategies, addressing in a critical, objective and contextualized manner cultural diversity on the learning spaces from the growth of various subjects, promoting inclusive education and reinforcement of intercultural competencies on the identities' construction for full human development.

Another factor to analyze is the teacher training, as they make possible to assist cultural diversity, given also are from that country's zone. However, on the processes of continuous training, the scientific and pedagogical education they must attend is the phenomenon in our schools is not evidenced.

Then, the challenge for the educational system is applying mechanisms involving the engagement of all protagonists: family, teacher, community on the construction

and implementation processes of elementary, secondary, technical and university education curricula, to count the input from the realities of each village, culture and region. This will contribute to an intercultural education of quality.

The bet on the National Educational System must be creating an inclusive scholar culture on multicultural contexts, aiming for the creation of an educational community orchestrated by values, peace culture, fraternity, identity. All of it for the educational experiences processes with valuable essence, culturally pertinent for all protagonists.

Although it is true this topic is displayed in an ample literary diversity and here would be lacking the compilation of all lenses, the intention is showcasing the gaps existent in our educational system, in the quest of improving the attention of cultural diversity in our schools and learning spaces, and more than challenges, take advantage of opportunities presents this educational reality.

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A difficult problem: distinguish between good and bad education

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Un problema difícil: distinguir entre la buena educación y la mala educación

Abstract

Since ever, education has represented a strategic field vis-à-vis the development of a society or a country. The best bets have been placed both by Tyrians and Trojans, for education. This paper sets out a problem and tries to solve it. Education is not enough. It is necessary to distinguish between an education that states, exalts and cares for life, and any other form of education. It is all about tracing demarcation criteria between good and bad education; this is the one that benefits or harms life. This is a problem that has not been openly formulated, as yet. This paper argues that such a distinction is compulsory. Four arguments are set out to support the claim. Such a distinction is necessary vis-à-vis developing capacities and learning about the complexities of life, and the world.

Keywords: teaching, learning, complexity, life, history, politics.

Resumen

La educación representa, desde siempre, un ámbito estratégico en el desarrollo de una sociedad o un país. Las mejores apuestas han sido hechas, tanto por

Tirios como por Troyanos, por la educación. Este texto formula un problema y busca resolverlo. La educación no basta. Es preciso distinguir entre educación que afirma, exalta y cuida la vida, y cualquier otra forma de educación. Se trata de establecer un criterio de demarcación entre la buena y la mala educación; esto es, aquella que es beneficiosa y la que es perjudicial. Un problema que no ha sido identificado abiertamente a la fecha. La tesis de este trabajo consiste en distinguir la enseñanza del aprendizaje. Se aportan cuatro argumentos en favor de la tesis señalada. La distinción es necesaria de cara a las capacidades de adaptación y aprendizaje para las complejidades de la vida y del mundo.

Palabras clave: *enseñanza, aprendizaje, complejidad, vida, historia, política.*

Introduction

Education has always been a strategic factor in the development of society or state. Inthe origins of the Western civilization, in ancient Greece, education was strongly intertwined to democracy; education was directed towards free men for them to be free. Its name was *Paideia* (Jaeger, 1992). Before, education was a privilege for only a few, at best, for some people. Greeks make education the agora's matter, the public square. Arguments are discussed in public, and each one is required to provide reasons or to request motives for the acts, decisions, among other things. *Logos didomai¸* it was said technically. The verb *didomai,* in Greek, meant to request or ask, as well as ordering or demand *–logoi*; implying reasons, arguments. The *logos didomai* was the specific concern of philosophy; and its result was an *episteme*. The rest were entirely subjected to the process of *learning* (paideia). Indeed, the *paideia* didn't design strictly education, but formation.

In English, making a distinction between *education* and *formation* is common. Originally, someone is formed in a discipline or a degree; subsequently,

is educated at another university or another scale. In French, it exists a similar distinction; something in Spanish is highly deluded. Rather, education provides every conventional process that goes from pre-school to the level of higher education; until getting to a doctorate.

The history of education has always been associated with the deployment of each one's best capacities through a process – eminently selective– articulated or directed by a teacher. Thus, the teacher teach(ed), and the student learn(ed); the dynamic was education itself. It exists a vast literature about the history of education, as well as the history of pedagogy. However, it is not the aim of this work. Rather, this paper is defined by the identification of a problem, which is: the distinction between good and bad education.

At first glance, from an institutional point of view, this would refer to the assurance of quality, which nowadays would be constituted in accreditations, scales, and selection systems guided, supposedly, by academic excellence. Whatever it is, *cum*

grano salis. Good education would be guaranteed by accreditation –national, first, and international, after–, and by the subsequent hierarchy of scales of every type; scales of universities, faculties, administrative systems' programs; of their own teachers.

Behold, an open secret: all universities –and schools– work entirely for scales; just a few –or none– dare to admit it. Everything else is simply administrative engineering; with a name or another. This article endeavors to support that this is not where the demarcation criteria between good and bad education is exclusively established. By derivation, bad education would be those not accredited universities –and schools–, and badly or not graded. Certainly, accreditations and scales involve the quality criteria; but these are not exhausted in them.

This paper aims to direct our gaze in another direction. The thesis of this work states that bad education consists in teaching. In contrast, good education, in learning. As it is appreciated, I'm not talking about teaching-learning, but the necessity of separating them. Thus, it is evident that before solving the problem in terms of management, the subject is of a truly profound scope. Complex problems cannot be addressed or solved in terms of mainly management. Not only is that wishful thinking, but it is a perfectly wrong strategy. The best distinction is the radical separation between teaching and learning, an authentic philosophical dilemma. Ultimately, every discussion about concepts is a philosophical debate.

Four arguments emerge to understand the thesis. The first consists in the recognition of strategical, historical, structural importance of education, since the beginning. Education, however, is nowadays found to be overrated. Moreover, its own conception has changed structurally on the frame of the society of information and the society of knowledge. The second argument states and demonstrates why bad education is based on teaching. It exists a very serious ambiguity as result of history and atavisms, on one hand; and on the other, facing the incomprehension of the times we are living today and towards the future. The third argument is widely the most important and constitutes the true thesis of this work, explore: good education is founded on life; in the care, exaltation, enabling, and gratification of life. The first consequence immediately appears before the sensible gaze of what education is today, for the first time, is not an eminent or distinctively human matter. Ultimately, the fourth argument states that in the society of information, the society of knowledge, and the society of networks, no one teaches anyone; instead, we all learn. In the final analysis, conclusions are drawn.

Importance of education, its challenges and problems

The ancient Greeks have the merit of making the education a common matter, basis, and consequence at the same time of democracy. It is worth recalling that Greek humanists were sophists –significantly Plato, and Aristotle, too– they established their philosophies as a refusal and opposition to humanism. "The sophists are the first Greek teachers, in the proper sense of the term. 'I admit that I am a sophist, and I teach the men' Plato makes Pythagoras say" (Llanos,

1969, p. 15). Before Greeks –at least in the standard history that has been made by the western civilization–, education was selective, exclusive, particular (today we would say, private). Even Pythagoras imposed in the ancient Greece the idea of Egyptian cut of the division between education and esoteric knowledge and, the education and the exoteric knowledge.

Education was conceived and aimed to freemen precisely to make the men free, verbatim. Subsequently, this foundational idea is deluded. Education, gradually, is guided to glorify intellectual and cognitive capacities, but not to the cultivation of liberty. The phone broke too soon, so to speak. It was exactly what happened between the ancient Rome –remember, for Greeks, the Romans were barbarians; similarly, as Nordic villages were to Romans–. Promptly, the articulation of education in the Middle Ages surrounding the *trivium* and the *quadrivium* was anything else but the acclamation of liberty. Evidently, in the sociocultural, spiritual, and political context of the Middle Ages, freedom was impossible. It would have to wait for the end of the XVIII and start of the XIX century for freedom to return to being situated as a subject of worry for education.

It is a recognized fact, since modernity up to these days, the development of a nation is directly proportional to the type of science –and technology– produced in a country, to which the education results *conditio sine qua non*. Succinctly put, between the XVI and XIX centuries, education is found in the service of science and leading-edge research. It would be in the XX century when, in a truly contrary manner, education will be placed at the service of work.

Science and technology –euphemistically, science, technology, and innovation– are only subsidiaries of the productive and labor system.

In sociological terms, education is assumed by society and *strata* as a social mobility mechanism. Explicitly, higher and better education, higher and better quality of life conditions (Nussbaum & Sen, 1996).

In the higher knowledge scale, countries are related to each other in function of the science and technology they produce and consume. On the level of universities, these are related through knowledge, in terms of the Nobel prizes they have, or their equivalents. Ideally, in Latin America universities define each other, and in front of the State and society, by their accreditations and the place they occupy on the different international ranking systems (or, in the worst-case scenario, nationals); incidentally, they are also related to each other according to the percentage of teachers who have master's degree or doctorates. A clear sign of subdevelopment.

Explicitly stated: the most important countries in the field of knowledge worry if the number of Nobel prizes, or their equivalents, is low or if it has been a long time since they have received one. It's a matter of national pride and international goodwill.

Some scientific research programs clearly show it without difficulty. For instance, the countries that have launched spaceships to the Moon; or have made robot landings on Mars; or the topics related to quantum computing, and many more. This is an expression of the knowledge tip, therefore, the tip of education too.

The fact is that Tyrians and Trojans recognize the *strategic* importance of education. The adjective must be read with all the depth charge of the word. Systematically, the countries, nations, universities, and schools are scanning the national, regional, or worldly overview in search of referents, learnings, indicators, proceedings, decisions, and forms of articulation and implementation of educational systems. Some emulate others; others imitate the rest, and some try to do their best in function of their own capacities.

The result is the generation of a wide range of forms, systems, and subsystems of education. For example, depending on the technical and technological needs, or the basic investigation; or in terms of the employment needs, and so forth. The inversion of the demographic pyramid in several countries has even formulated the need of education for the third age. Therefore, we assist a large stage and in incessant movement.

Not in the last instance, particularly in Latin America –and by derivation, of pedagogy– are truly simple in form, and management. The own structure of education has not changed, at least since the Middle Ages. Verticality is the characteristic –in the best sense of ancient: *magister dixit*–, the assumption, explicit or tacit, of hierarchies –for example: hierarchies of forms of knowledge–, and distancing. It led to the compartmentalization of education. The precise expression consisted in the famous debate of faculties, to which even Kant (2020) refers. In the University, students are formed within faculties, schools, and departments. Then, knowledge appears and is structured fragmentarily.

Recently, the development of artificial intelligence has been debated and –I would

like to highlight– overthrow the structure, and own design of the systems of education conceived, structured, and managed the way appreciated as shown above. In a word, it is about education founded on teaching.

However it is, education is found in the center of strategic politics in an unsuspecting sense of the word. Everything else is on the list; this is, the political horizons, work structures, programmatic or philosophical ideals, and many other similar considerations. Education defines the attitude of beings, communities, and societies.

Up to this point, it hasn't seemed to be a serious problem.

Bad education is founded in teaching

Aristotle deeply harmed humanity, specifically knowledge and education. Inherited from Pythagoras (Hernández de la Fuente, 2019), Aristotle imposed the belief of the existence of better paths of knowledge and, consequently, a need for hierarchy of organizational structures. Thus, a hierarchy of the social organizational structures of knowledge (Aristotle, 2020).

The immediate effect of a similar assumption is expected. If the idea of better ways of knowledge is sustained, it means there are better human beings than others; some who know and dominate said knowledge and those who don't. All conditions are thus established for inequality, inequity, and violence.

Explicitly or implicitly, the whole educational system was based on a sturdy asymmetry: on one side, the students, and on the other,

the professor; on one side the student, and, on the other, the book or books. Historically, the invention of the printing press by Gutenberg strongly contributes to partially leveling said asymmetry (Burke, 2012). However, it is at the end of the XX century and the start of the XXI when the history of education, alongside knowledge, changes drastically.

Sociology has placed it in evidence as well as other sciences, and social and human fields. In 1990 we assist globally to the transit from postindustrial capitalism to informational capitalism. Thus, the society of information surfaces. In the first decade of the XXI century, the society of information transmutes to the society of knowledge. And in the following years this transforms into the society of webs. The society of information, the society of knowledge and the society of webs: three moments in one dynamic (Castells, 1998).

We assist a unique transition in the history of humanity; it is about the transit from an analog world to a digital world and society. There is a duplicitous determining factor in this process. On the one hand, it is about the computer and computation emergency. And, concomitantly, the birth and deployment of the internet, born in 2008, in CERN (Conseil Européen pour la Recherche Nucléaire). Consequently, the world becomes vastly rich.

In fact, the digitalization of knowledge –an unfinished phenomenon–, does not imply the disappearance of the analogical dimension of reality. Rather, what once were variables in research terms –for instance, independents, dependents, aleatory– are transformed into data. In 2010 is officially declared the birth of big data science. For the first time in the

history of the human family, knowledge no longer belongs to someone. On the contrary, knowledge is a common good and is within reach for everyone. The digitalization of books, articles, the inception of academic webs – such as academia.edu or reseachgate.net– achieves a democratic role.

It is with a fundamental assumption that there is knowledge and appropriation of the informational and computational systems, and digital literacy, in all the lines of the word. Unequivocally: the main form of contemporaneous illiteracy is technologic illiteracy.

It is this instance when it should be stated what bad education consists of: in *teaching*. In the belief and structure of someone who teaches (because they know), and others who learn (because they do not know). Semantically, it is in this scheme where students have always been alluded to (in English, *pupil* designates someone who lacks a home, the homeless; in French, *élève* is someone who is formed and taken care of because they know nothing; in German, *Zögling* means someone who lacks a home or a house and, in Spanish, the one who lacks light. All, one idea only).

Education consists in teaching, and this is the perfect asymmetry in the process of cultural, politic, and ideological learning. Teaching isn't anything other than indoctrination. It is a way of life and thinking founded in algorithms. Every scenario is about compliance, obedience and submission, and total absence of criticism, construction of personal criteria, independence or autonomy. We find ourselves in the antipode of the original *paideia*, to convey it in some way.

Education teaches anything, even less to think. At best, it teaches only to know. Knowledge is not enough for the acknowledgment, care and enablement of life. It is an essential condition.

Every teaching is unequivocal, unidirectional and disciplinary, or from a Foucauldian perspective, in the epistemological sense that behaves the exaltation of education in compartments, segments, divisions. At school level, this is referred to as a lineal curriculum and, generally, consists in the curricularization of education. Essentially, institutionalism is imposed, the teacher nominally has all academic freedom, but the program and curriculum are already designed and mandated. Everything ends in the administration of knowledge as life's administration. Education relies, is guided and established in the work system, which is a subject to the capital; methodologically, financially or conceptually speaking.

Bad education is forced teaching. Regarding this, justifications are the least of it. Before it was the *magister dixit*; today is power with any attire. Education has been transformed into an institution, along with institutionalism and neo-constitutionalism, being introduced to society, from the years 1970 and 1980, to the present. A sensitive gaze can understand the dangers of similar positions that are largely predominant; semantically, to say the least.

Schools and universities have come forth to be labeled "institutions" (*horrible dictu*) and lost their original essence. It's about the performative function of language (Austin, 2009). Institutions think (Douglas, 1996), an astonishing revelation. This is what bad education consists of. Evidence presents no subtleties.

I would like to highlight the consequences of bad education. It forms bad people. Bad people are indolent –institutionalized–, insensible to human suffering. It exists a solid catalog on this regard. Bad education forms gregarious people. Plainly, bad education forms psychopaths and sociopaths (Hoffman, 2014; Greene, 2013; Dixon, 2006). Certainly, a hard conclusion, where there are.

In contrast with the previous overview and is possible to develop a good education.

Good education knows about life

Before our eyes stands –even if the expression is tough: against us–, an institutionalized education system entirely built in function of the work organization, not for freedom or (free) thinking. The ethics spread, from the earliest age of education, as follows: "you have this task; an obligation. You must do it. We all have to do things we do not like", as if life is composed of sacrifices every day, embedded in the term: homework, or obligation. They are disguised as: "compromises". Education's conception and experience of life has always been sacrificial. The three main religions of the western civilization vastly know about this. As Graber (2014) stated, combining religion, anthropology, history, and linguistic history, duties and tasks, sins and debts are one and the same thing.

The society of information, first; the society of knowledge, later; and, finally, the society of nets –three movements of the same composition–, declared information, and knowledge are not heritage of anybody for the first time in history. They have become common good. I would like to highlight: a common good, not a private

good, and undoubtedly not a public good. After all, the society of networks asserted the true value of society is relations and networks. This is the cooperative system (*networking*). Cooperation is the genuine value of existence, immediately redirecting to mutual help, solidarity, friendship, companionship, camaraderie, neighboring, and cooperative agreement.

The above finds a definite expression. We live day by day, a different world of zero score, in where the games –interactions– are different from scoring zero. When someone wins, someone else also wins, even with variations. If someone loses, someone else loses, even with differences.

Acknowledging the dynamics, relations, and associations, it is apparent we live a perfectly separate experience to education. First, education no longer coincides at all with schooling. Secondly, even more notably, education transmutes to learning.

Good education is learning; but learning, strictly, is no longer education, is life. Learning involves collaboration, implying mutual learning. It goes beyond simple semantic changes; it is about transformations or ontological relations, if desired.

While education is asymmetrical, ranking, and is established on responsibilities and tasks, learning steers its gaze towards fruition, and the gratification of experiences, spaces and interactions. Structural and dynamically, it regards displacement of competencies, skills, and abilities, towards likes, sensations, and knowledge (Maldonado, 2022). What promptly emerges before a sensible gaze is enjoyment. The enjoyment of learning; the delight of the educational process.

Traditional education, or bad education, in a Kuhnian or Napoleonic connotation, consists of turning human beings into normal beings. Essentially, Th. Khun distinguishes two types of sciences: normal and revolutionary. Normal science can be understood as the current paradigm, hegemonic, which function is not solving problems, but displace them, adjourning them. One of the most prominent work forms of normal science is the study of cases: studying already solved problems. Numerous examples in diverse areas of knowledge could be mentioned effortlessly. Normal science turns human beings into normal.

On another level, Napoleon referred to normal people –regardless of its connotation– as "worthy idiots"; they do things, know how to do them well, are quite pleased with what they do; but don't understand what it is they are doing or where they are going with what they do. The environment or atmosphere consists of institutionalism as well as neo-institutionalism. Both shape submissive people, lacking critical spirit, obedient, efficient, with a sense of longing. Essentially, passive and solely reactive subjects. The reengineering (social) forms have been specially tailored for them; the periodical or regular reassessment and redesign of institutions to achieve better performance and productivity, in every aspect.

Bad education is founded entirely on the importance of algorithms. An algorithm is a procedure to solve problems or do things; manual functions, Mission, Visions, Himn, Flag, Objective, Plans, Programs, Leadership, Strategy, and other tools, strictly, of reengineering. It is precise to consider the contemporary meanings: it will

always be necessary to return to Austin's work, and the importance of pragmatics. *Ditto*: bad education. Without further ado, an algorithmic thought is no other than a form of an algorithmic existence.

An observation is imposed, a sensible gaze before the state of the surroundings highlights the language in vogue is eminently conductivist. All algorithmic systems –sociology, politic, educative, historically speaking, for instance–, possess and display conductivists languages; conductivists languages and conducts. A wide-range reflection of broad-spectrum surfaces at this point. Everything will depend on the sensibility of each person, and each one's critical capacity. This way is acknowledged the strategical importance of education, for Tyrians along with Troyans.

Plainly spoken, good education is not algorithmic and *a fortiori* by any means, neither conductist. Simply, no reengineering. The conclusion does not wait: good education is found, it is reaped in the antithesis of institutionalism and neo-institutionalism. Verbatim: good education is not *education*. It is life, and life is not the object of education, but of learning, joy, gratefulness, coexistence, no hierarchies, since the nucleus of hierarchies does not exist in nature. These are (false) anthropological, anthropomorphic and anthropocentric notions.

Education is a human dimension. It does not exist in nature –the educational system; for which it is necessary to return to the very rich history of education and pedagogy–. Furthermore, learning exists. And, in learning, what is at stake is life itself.

Certainly, education is directed to work, and most human beings work to pay debts in the capitalist system: this is not life. It is a very sophisticated social control system. The bancarization is the smartest and perverse weapon Power has ever deployed, evil in its greatest expression.

Without dualism, good education elucidates this –and other processes and dynamics– equivalents, elaborates a thorough critic and formulates alternatives. No one thinks well if all possibilities are not considered; not because all possibilities are fulfilled, rather contemplating any could be carried out. Learning is crucial, not for criticism itself –a tautological statement–, but for the function of life, the care and enablement of life. Making life possible in every form imagined or however possible.

Concluding this section: worries about curriculums, programs, plans, systems and subsystems, politics and strategies, methods and methodologies, tools and dynamics of education that openly and immediately do not place life in the center is a disguised control system. Everything, absolutely everything else is auxiliary.

Today, nobody teaches nothing to anyone: we all learn

This work advocates for an education for life. It should not, in any way, assume a sacrificial of itself. In stark contrast with the history of western civilization, education for life is grounded in fulfillment. Knowing how to enjoy oneself, the company of others, small details and instants, everything. Essentially, enjoy time in its briefness and insignificance.

This position is not obliged to be assimilated to something akin to stoicism, a philosophy of crisis and exhaustion periods, a call to resist as the world sinks. We only learn from things we enjoy. The Western never knew how to enjoy anything, a fearful civilization (Delumeau, 2002). There is a new civilization surfacing that knows about magnific and dense times, life and health (Maldonado, 2023), and, therefore, can learn about delight and enjoyment.

True knowledge –which exalts and cares, enables and gratifies life– is not built, it is sown. Sowing involves a lifestyle different from construction. Beyond discussions –eminently academicist, between constructionism or constructivism. It makes no difference. Sowing brings *wisdom*. We must ask earth for consent to be exposed and plowed. Seeds are watered, covered in soil, watered, and await good weather and conditions. When the crop is sown, it is cared for, but things do not depend on us. It fundamentally depends on nature.

Every education was and is largely concentrated around knowledge. Therefore, all concerns for didactic; from the wandering walks and the maieutic, even memory and repetition exercises –specific to academics–, even the inflated ludic approach. History is extensive and understands the rewriting of programs and updates, the administration systems and reengineering –very consistent in classical schools and universities–, and other aspects. Unfortunately, Latin American is a prolific land in these practices, beliefs and authorities.

Knowledge is important for life but is never enough. Fundamentally, it requires a lot of imagination for life, a high capacity for improvisation and games, ideational games,

intuition and some change. Learning about chance, indefiniteness or uncertainty is key for life's capacities. Before competencies, skills and abilities, it's about the construction of capacities. We must learn for life; not for the current economic, politic or social system. Since these are always provisional. Life remains and is made possible against all odds. Regarding the science of complexity, this is said specifically: living systems do not obey entropy.

Life wants us as learners, much more and better than simple cognizant. Evolution always has a place on a local scale. Then, we must learn to *think* in function of changing surroundings, defined by fluctuations, instabilities, perturbations.

I would like to propose some learning pathways perfectly unknown to the existent and predominant education. These are nurtured from non-classical logics, one of the sciences of complexity (Maldonado, 202). Table No. 1 illustrates the connection between diverse ways of learning and some of the non-classical logics, facing an education that knows about life, of not-institutionalized character, and carried out horizontally, from below; from the group experience, of the meeting, and not the curriculum program, plan or educational program (institutional) (horrific expressions, remote from good taste).

The first column presents some of ways of fundamental learning for the cultivation of critic and free spirit. The second contains non-classical logic that corresponds to their pairs.

The observation of the second column is about punctually characterizing each one of the mentioned non-classical logics.

An expansion of these logics and their relations exceed the grasps and expanses of this work.

The erotetic logic is the logic of asking. *Erotein*, Greek, means inquire, question. Specifically, erotetic logic shows that a question is not answered. Moreover, one question concedes another question: a question can be addressed through another question. The typically institutionalized thinking has taught every question implicates an answer. In the scientific investigation methodology –eminently positivist–, this way it has been stressed.

It exists a proximity between erotetic logic and the pedagogy of asking according to P. Freire (Freire, Faundez, 2014). The worth of Freire and Faundez' works lies in stating the engineering of bad education demands answers to non-existent questions, since they did not emerge from the community of learning; rather above, outside.

The fictional logic demonstrates there are things that do not exist and do not need to exist to be real. All the best nutrients to life do not exist –in the empirical sense of the word–, yet still are the most important: love, friendship, solidarity, music, poetry, dreams, hopes, stakes and risks, to name a few. Against everything that rationality exalts focused on efficiency, efficacy, growth, productivity. obedience, and consumption.

The multivalent logic –it exists tri, tetra, penta, exa and even heptavalent logics– promptly placed the world, society, nature woven on more than a single narrative, an only truth, a superb form of life (over the others) at the center. From non-classical logic, it certainly is the one that has the most freedom impetus, from afar. In other words, against the classical formal logic, things are not instituted and are used on binary systems: believers-atheists, day-and-night, buyers-consumers or whichever translations you may desire. There are other values, such as uncertainty, or not even true or false things, and others. In lifelong learning, polyvalent logic is highly suggestive and promising.

Closely related to the previous ones, fuzzy logic has the merit of drawing attention, before and above the absolute values – accuracy or fallacy, in the realm of logic– in degrees or gradients. All the immense range between 1 and 0; for example, 01,16 or 0,38 or 0,81–. Fuzzy logic revealed several values between the ones usually adopted as absolutes: truth, and falsehood. There are true (or false) things in 0,42 or in 0,99, but never in 1. The history of technology has stated accuracy of fuzzy values allows a highly stringent accuracy than traditional values 1 or 0 of 1 to classical formal logic. Prudence is the first learning fuzzy logic allows.

Free logic, on the other hand, allows us to live, work and think with immensely less budgets of existence than classical formal logic. It allows us to free ourselves from the

Table 1

Ways of Learning and Use of Non-classical Logics

WAYS OF LEARNING	NON-CLASSICAL LOGICS
Importance of the question. Connected questions.	Erotetic logic
Imagination, fantasy	Fictional logic
Multiplicity, diveristy	Multipurpose logics
Details, particularities	Fuzzy logic
Intuition	Free logic

Own Work

positivistic spirit of science in the wide sense; reduced to facts, data, tests, evidence, and experiments. This logic allows us to work with empty domain models, regarding experimental and experiential approaches. We can refer to terms –phenomena, systems and behaviors–, that do not denote to any object. I consider free logic to align with the learning of intuition bubbles, both a method and a research heuristic not positivistic and of learning, never of education.

Nobody teaches anything to anyone. Today for the first time in the history of the western civilization, we all learn from each other; even if with differences. Learning corresponds to a different world of zero sum. In other words, it is about a process –a story, a reality– in which everyone contributes, even with differences, and everyone wins.

We live in a highly interdependent world, sensible to innumerable dynamics, all non-lineal, given the systemic character of the economy and mostly of technologies. We must develop capacities in the face of life and the world. Particularly, in the face of growing complexities. Learning is not merely a matter of intelligence; not even the dull multiple intelligences, and emotional intelligence (Once again, a lot of reengineering). Learning is fundamental to life itself. Not only to resist, but also to create worlds, possibilities, realities, anonymous before.

Imagination, intuition, game, challenging capacity, dare and stake, the importance of fantasy and games, and the always important ability of improvisation. Everything while having a certain dose of chance, is truly main in the affirmation, gratification, care, delight, and the enablement of life.

We do not control things and certainly not the environment. This has a connotation at the same time natural, social, cultural or historical. The environment is always unsteady and shifting. The times of nature are of majestic complexity, unlike human times. Life is defined in the face of nature, not in the face of human matters.

In synthesis, learning means acknowledging life is a game played in the long run. It is then when things are judged with wisdom. Memory is feeble, with everything and how necessary it is. Knowledge becomes unused after some time, even more in the human scale, alleged as Moore's law. However it is, the subject is not educating oneself at all. It is learning. In this consists good education.

Conclusions

Good education cannot be titled as education. Perhaps the kindest way is learning. The political, social, historical changes also entail conceptual and semantic changes. Things cannot always be named identically.

In this paper a problem has been formulated and resolved. The identified problem has been solved against education, favoring learning. The reason does not depend on the terms or dimensions mentioned. The reason relies on the same support of life.

There is one assumption this work must have made explicit. We, the living systems, must be able to have a basic but solid idea of what life is. The subject overflows the frames of a merely anthropologic, anthropomorphic, and anthropocentric comprehension of life. Life neither

starts nor finishes as human beings. Scandalous as it could be, the human form of life is not the most important, from any angle. However, life places a light on the tragedy of learning. There are people, collectivities, societies, even civilizations that never learn; particularly, there are Churches, Parties, Companies, Armies, Corporations, that do not learn. (This way, in capitals, how they like it).

Not for educating oneself (a lot), you learn. The cost of not learning is comprised, biologically, in which an organism or species specializes. And when it is specialized, it becomes endemic. Ultimately, it becomes endangered and disappears. Nothing is more dangerous in the process of education than the specialties. Specializing: also, what bad education consists of.

A good education is nothing other than the relentless capacity of learning permanently. Curiosity is the true nutrient of a good education, not utility. The educational systems must be able to wake up and stay alert, curiosity is but the most elegant name of true freedom.

Nowadays we assist the death of a civilization. Yet, at the same time, there is a new civilization being born. Thus, a good education must bet well, and their compromises. The true project of a good education is, currently, of civilizational dimensions.

Language, values, styles, ideas and occidental forms and structures, in any meaning, has been revealed today as outdated. Even, once again, Tyrians and Troyans know it, all the same. The difference is, some are still betting on the Western, already in palliative care, because they are unable to do anything different. Others, however, risk themselves for a new civilization, exhibiting enough signs of life. Only the times we talk about are of high density, dozens, thousands of centuries beyond.

The living systems –including human beings– can deploy, even in the most unthinkable conditions, the most and best creativity. Education, as it seems, is one of the most suitable ways of *preparing for* an activity.

Learning is a condition of the possibility of adaptation, what it is all about. It is the true name of the game. Except, the adaptation measures in a time perfectly different from humans. The Western never understood it; therefore, it is in its last rales.

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Quality education: Analysis situated from the work of higher education institutions

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Calidad educativa: análisis situado desde el quehacer de las instituciones de educación superior

Abstract

Nicaragua has been consolidating the effectiveness of education in the different educational subsystems and levels in a joint work with different institutions, aiming at a continuous improvement in the quality of its different processes. This is possible because we have a regulatory framework based on the Political Constitution and its laws, which define the guidelines that regulate, guide and accompany the development of educational processes. This essay addresses the concept of quality from the approaches of Deming, Juran, Crosby and Feigenbaum. The purpose is to reflect on the quality of higher education from the point of view of its institutional action, considering the incorporation of quality as seen from the mission declared and assumed by Higher Education Institutions (IES by its Spanish acronym). Likewise, an interrelation is made with the advances of quality assurance in Nicaragua in the current context, with emphasis on higher education. It concludes with reflections related to quality in education and the role of the protagonists in the Nicaraguan context, whose educational model is centered on the person, family and community. This work aims to collaborate with educational institutions in giving meaning to quality from their actions, emphasizing that the center of quality is people. In them lies the responsibility for change and give that human face to quality.

Keywords: education, quality, university, mission, protagonist, evaluation, accreditation.

Resumen:

Nicaragua ha venido consolidando la eficacia de la educación en los diferentes subsistemas y niveles educativos en un trabajo conjunto con distintas instituciones, apuntando a una mejora continua de la calidad en sus distintos procesos. Esto es posible porque se dispone de un marco normativo sustentado en la Constitución Política y sus leyes, donde se definen los lineamientos que regulan, guían y acompañan el desarrollo de los procesos educativos. Este ensayo aborda el concepto de calidad a partir de los planteamientos de Deming, Juran, Crosby y Feigenbaum. El propósito es reflexionar acerca de la calidad de la educación superior situada desde su quehacer o accionar institucional, atendiendo a su incorporación desde la misión declarada y asumida por las Instituciones de Educación Superior (IES). Igualmente, se exponen los avances del aseguramiento de la calidad, en el contexto actual en Nicaragua, con énfasis en la educación superior. Se concluye con las reflexiones relacionadas a la calidad educativa y el rol de los protagonistas en el contexto nicaragüense, cuyo modelo educativo ésta centrado en la persona, la familia y la comunidad. Este trabajo se propone contribuir con las instituciones educativas para darle sentido a la calidad desde su accionar, haciendo énfasis a que el centro de la calidad son las personas, en ellas está la responsabilidad del cambio.

Palabras clave: educación, calidad, universidad, misión, protagonistsa, evaluación, acreditación.

Introduction

Nicaragua has a normative system defining the guidelines which regulate, guide and attend the development of the educational process covering all the subsystems. It is sustained in the Political Constitution of the Republic of Nicaragua. Education's objective is defined as the whole and holistic formation of all Nicaraguans with quality, free, pertinence and open access (National Assembly of Nicaragua, 2006).

Currently, the educational subsystems, Ministry of Education (MINED), Regional Autonomic Educational Subsystem (SEAR), National Technical and Technological Institute (INATEC) and the National Council of Universities (CNU) cooperate to fortify human capacities and institutional talents. The goal is to embody the educational model centered on humans, engaging the family and community, stressing the continuous progress related to the country's needs. Entirely to provide to economic, social and politic growth of the nation, boosting the evolution of scientific-technical and citizens competencies.

Undergoing the evolutionary transformation of education from each educational subsystem, it has been updated and designed regulations allowing the creation and pledge of quality direction system of educational endeavors, with a plan of interactive assembly in harmony with community claims and needs. This strategy allows to build interinstitutional partnerships with diverse entities nationally, generating auspicious spaces for the construction of quality, collective, contextualized, situated, pertinent and emergent learning, corresponding with the National Plan to Fight Poverty and for Human Development 2022-2026.

From the educational oversight, securing quality in the learning of Nicaraguans, queries arise in relation to the notion and operationality of the term "quality" between members of the university community: What is quality on the educational processes? How is quality in education perceived? From which slant is quality in education assessed?

Different forms of interpretation and addressing of "quality" by experts, specialists, and key actors (teachers, students, directives) exist in education, linked to the context, proficiency, opportunities level, role, outlook of estimation, growth, and evolution of the educational act.

The research aims to reflect on the quality of higher education set from institutional action and work; it takes as key reference the task of evaluation and accreditation to contribute with educational institutions aiming to clarify quality through their actions, emphasizing how people are the center. They have the duty of change and give that human face.

The study entails four moments; the first one regards the theoretic form of the elucidation of quality for diverse authors and set on education. Later, it refers to quality on the Nicaraguan context; thereafter, it institutes the relation of quality in education with the mission and evaluation, from the compromise declared by institutions, and assumed through their actions for the compliance of their functions. In the fourth one, quality education and role of protagonists in the Nicaraguan context, defining the achieved advances in the country's quality in education, highlighting the protagonists' leadership will be addressed.

What is quality?

Quality derives from *qualitas*, meaning property or assembles of properties inherent to something, enabling to judge their value. The previous statement places quality in different organizational contexts, whether in the business, social or educational sphere.

It is a vexed inquiry. Zúñiga et al. (2007) argues the notion of quality is a social construct depending on the community's needs. Academics assign value to pedagogical factors. On the labor field, they are interested on competencies of students who graduate. As per these authors, institutions must build and agree on a concept of quality, adopted and shared, crossing the work of essential functions, here: teaching, study, control, and linkage.

This assertion arises from a study defining quality by authorities, teachers, and students. Results denote each consulted group had agreed with the functions or role they play in university: Key sources were focused, aligned

with their experience and work area, in the academic management, lesson planning, oversight, teaching, formation, teacher experience with profile from the specialty. Regarding the group of students, they valued quality from amassed experience and updating of teachers, with solid technical or professional training —how they express it— "trained with quality, warmth, and humanism". (Orozco, 2016, p. 213)

Various authors dedicated themselves to the study of quality, settling from administrative and business management, wherein this definition comes from. Historically, the purpose was rooted on improving the productive process of companies to refine objects at a low cost to satisfy clients or consumers and guarantee rentability, namely, work proficiently. Inside these approaches can be found the authors: Deming, Juran, and Crosby. See table 1

Feigenbaum (1996) indicates: Quality is, essentially, a style of direction. The impact to the entire organization of total control of quality involves the management and technical execution of quality activities steered towards the client, as a responsibility, of first line, entailing full client satisfaction. (p. 901)

Derived from the meanings of quality disclosed by the earlier mentioned authors, it is inferred quality must be set up by the direction. It is a work style which must ensure the staff excels in assigned tasks to guarantee quality in all the processes. Thus, it is proved people's work is key in the processes of quality, since they are directly involved in the actions.

Table 1
Definitions of quality by differents authors

Authors	Approach around quality
Deming (1989)	Deming (1989) "Quality starts with the idea, which is established by the direction (…) and must be guided to the needs of the consumer, present and future" (p. 3-4)
Juran (1990)	Juran (1990) Refers to quality as the adequacy to the use, in two different directions: "the characteristics of the product that satisfies the clients' needs and the absence of deficiency" (p. 14)
Crosby (1998)	Crosby (1998) "Quality doesn't cost. What costs money are the things that don't have quality —all the actions result from not doing things well the first time" (p. 9) Ensure quality means: "Make people do better all the important things that they would do anyway (…) People include both to the high direction as the lower levels of the organization" (p. 11)

Own Work compiled from the approaches of Deming (1989), Juran (1990), and Crosby (1998).

The concept of quality from the educational perspective

In the early XXI century, education evolved in the care of the growing student population, demanding qualified staff in all different areas of knowledge, aiming to answer the requirements of varied educational and labor scenarios.

In this regard, the need to accentuate the pertinence and quality of the learning processes, nexus of learning with investigation, innovation, and social projection, under a transversal approach transcending learning scenarios with an educational model centered in the person, family and community gains momentum.

With this new model, the expression "educational community" awakens and holds true since exists an engagement of: State, leaders of educational institutions, parents, students, teachers and diverse key actors of society, who see the need of collaborating for quality in education.

For the academic field, challenges are greater each time, given academic circles demand a quality in education. Educational institutions strive to have high quality teachers and state they give an education of quality. Briefly, we all want and demand benefits of quality in education for all key actors of the education system.

The transition from a concept of quality comes from the business field to the education field creates disputes for the different interpretations and meanings, analyzed considering the existent theory and context. Education is considered as a complex system, where various interrelations between the subsystems, components, processes, and actors exist.

The above shows it exists some hurdles to clarify quality in education among these contexts:

→ Complexity of education, since it has to function and be studied systematically and integrally on different subsystems and levels.

→ Pertinence of different educational programs answering social needs, technological and productive development.

→ Disagreements generated between the coherence of achieved results with the purposes and goals proposed.

→ Complexity of applying an educational model assumed and declared by educational institutions.

→ Role of teacher and student as architect of the educational act.

→ Broad vision of education exceeds the learning act, incorporating functions as investigation, innovation, and social projection or extension.

→ Organizational culture transcends its structure, organization and functioning.

As observed, there is not a definition integrating all these education's attributes. Yet, varied authors have bared their ideas and meanings of quality in education, seen as a mission corresponding to them and the practice of their work: Quality in education is resolved on the capacity of priming the individual so they can adapt and assist to the growth, economic and social

development through their addition to the labor market, so quality is valued in terms of progress and modernity of the country. (Marqués, 2008, as cited in Cardoso Espinoza & Cerezo Mercado, p. 71)

Gago (2002) states quality in education must be grasped as the synthesis of attributes possesses process/art/science/technique we call education. While Vidal & Morales (2010) imply it is understood as the positively assessed effects for society regarding the process of formation carried out by people in the culture.

Per these definitions, quality in education is related with the duty assumed by institutions to form people, considering the area of knowledge and general culture. Thus far, it is the same society that values the quality of their protagonists' formation and their contribution to the development in the social field they are immersed in.

In higher learning, Lemaitre et al. (2012) unveil the following approaches denoting quality: [...] quality on higher education as the degree of adjustments between the actions of an institution, academic program or degree is launched to comply with orientations from their institutional mission and purposes, and the results are obtained from these actions [...] Thus, quality can be grasped as the coherence between institutional purposes, strategic objectives, and activities done to meet these objectives, considering also the means used for it (p. 27).

The definition above draws us nearer to notice quality in education related with the display of institutions and achieved results, since it shatters educational processes as teaching, investigation, innovation, and extension, guided by institutional references as the mission, principles and values to apply through strategic and operative planning coherently with the needs of the surrounding.

Quality of education in the Nicaraguan context

Nicaragua is a country which has had valuable progress on education since the triumph of the Sandinista Popular Revolution in 1979. From the Political Constitution of Nicaragua, on articles 58, 65, 76, 93, 101, 105 and articles of the title VII about Education and Culture, the State assumes the duty of securing education to all Nicaraguans and in all levels. It accepts training and updating of public servants, which must be pertinent and focused to the progress of production and good performance on the elaboration, execution, and follow-up of different plans, programs or projects, social, politic and social security.

Thus, the General Law of Education (2006, chapter III, art. 6) defines quality in education as: Transversal criteria of Nicaraguan education challenging the educational processes related to academic results and the relevance of learnings for students' life. Includes the conception, plan design and study programs conforming an important part of the curriculum; as well as the performance or yield of learners, the educational system or performance of students, the own educational system itself and education in its relation with human capital required for the nation's development. Quality in education aims to build and develop relevant learnings, enabling learners to face successful life

challenges and each one becomes a positive subject-actor for the community and country.

The National Council of Evaluation and Accreditation (Consejo Nacional de Evaluación y Acreditación, CNEA) outlines quality in higher education as: Set of characteristics or aspects to be possessed by institutions of higher education, aligned to priorities of their mission and institutional identity, to satisfy needs and expectations of the Nicaraguan society, for their own transformation and surroundings, supported in a culture of continuous improvement. Hence, the processes and resources must be guided to these purposes (CNEA, 2019, p. 41).

As previously defined, the CNU adopts the definition of quality established by the CNEA; also, explains "this adoption, establishes the compromise of the CNU to work in the constant improvement of Nicaraguan higher education" (CNU, 2023, p. 33). The above exhibits the compromise of this high body of higher education to focus their actions on continuous improvement of the academic and administrative processes of universities.

The premise of this definition of quality clearly evidences the compromise of boosting the articulated work between the CNU and CNEA to regulate higher education. This constitutes a fundamental factor for universities, having the same referent and metamorphic approach focused on the continuous improvement of the institutional and academic area.

Considering the concept of quality raised by the CNEA and CNU, both are focused on a strategic vision of the country, giving life

to the quality from the perspective of the continuous improvement on the processes and good use of resources for the purpose's achievement. Ergo, it is assumed the quality in higher education is measured by institutions accomplishing their mission and objectives they were created.

Relation of quality in education with the mission and evaluation

The different approaches shown in this paper about quality place it from the actions and activities of the educational institutions to the mission with a mainstay guiding the operating of the institution and a key indicator for the assessment and accreditation, aiming to guarantee the continuous improvement. The prior approach is sustained by the concept of quality declared by the CNEA and assumed by the CNU. This organism claims quality through the dimensions, evaluation criteria, guidelines and evidence incorporated on the guides and manual created and provided to universities for the development of the evaluation and accreditation processes.

The broad concept of mission refers to the power or faculty given to someone to perform a role. Ergo, the mission is the presentation letter of the organization. In this light, the CNEA, on the Glossary of Higher Education of Nicaragua, assumes the mission as: The general and lasting statement of the institution's purpose which discerns it from other institutions of their core nature, it identifies them by defining the spectrum of their operations in terms of their area of influence and added value it contributes (p. 43).

The concept of mission awakens on the Nicaraguan Higher Education Institutions,

considering it manifests what is expected of them and their attributions as higher education institutions, as established on the General Law of Education (2006, chapter VI, art. 48): The Subsystem of Higher Education constitutes the second stage of the education system that consolidates people's vital training, cultivates knowledge, develops investigation and innovation, and trains professionals to the highest level of specialization and improvement in all fields of knowledge, art, culture, science and technology aiming to cover the demand of society, ethnic community and assist to the development and sustainability of the country.

From the prior approach, the CNU (2023) declares the subsystem of higher education's mission as follows: We are the governing body of the Nicaraguan subsystem of higher education conceived as a public and social good, assuming the promotion and oversight of learning, centered in the wellness of people, families, communities and guarantees a quality education, integral, inclusive, pertinent and intercultural, boosting the use and generation of knowledge, to contribute with good living and progress of the country, based on the principles and values founded in the Political Constitution and national plans, promoting the participation of all society (p. 4).

The above is a key referent for universities in the approach of their missions, allowing them to place academic actions aligned to the country's regulatory framework and the established by the governing body of the subsystem of education, considering different strategic axes in the declaration.

Within the content of the mission declared by the CNU, it is observed the following strategic axes: promotion of learning, management of learning centered on people, families and communities' wellbeing, enhance the use and generation of knowledge, guarantees an quality education, holistic, inclusive, pertinent and intercultural, assist with holistic well-being and progress of the country, principles and values stated on the Political Constitution and the national plans and participation of all society.

The clearest expression of the mission's operativity on higher education institutions is visualized on the institutional project, development plans or strategic plans, operational plans and plans for each instance, incorporated on the different academic and administrative processes with their respective actions, indicators, goals and results comply to.

As previously stated, the mission is tightly related to quality, to the extent the action of the institution is pertinent and aligns with the mission. Thus, it has been a key referent or major factor in the process of assessment and accreditation.

The mission of universities: a key referent for the evaluation and accreditation

Commonly, each higher education institution in their strategic framework declares the mission with the essential elements of the institution's identity, defines their actions, integrates the challenges, engages the staff and a referent to evaluate the scope or outcomes. This is assumed as the institution's presentation letter.

In the models of quality control, the mission is the important referent guiding the quality verification. Its declaration must be pertinent, coherent and precise. As Özdem (2011), the mission must be clear about the institutional purpose, indicating the target market, activity field and needs the institution procures to satisfy.

The relation between the mission declared by Nicaragua's Higher Education Institutions is presented with key areas linked to their actions and their compromise declaration with quality in education.

According to the identified key areas in the universities' mission, observed as follows:

→ Declare their actions and functions as an educational institution.

→ Justify their reason for existing, stressing on students' learning which address the labor market's demands, knowledge evolution, science and technology, and their contribution to the diverse segments of society.

→ Emphasize the core functions' management namely investigation, innovation, extension or social linkage, in their compromise with society.

→ State tenets and moral values to guide institutional actions and academic programs.

→ Visualize the definition of success in the identified key areas.

The compromise with quality declared on the mission must be highlighted. Therefore:

→ It expresses the interest in the quality aimed at learning.

→ It emphasizes institutional quality focused on the substantive functions.

→ Institutions visualize quality through institutional evaluation and accreditation.

→ Compromise with quality is projected into the future, with more than 50 % of IES applying it.

Aspire to national and international accreditation to achieve quality.

In the mission's key areas, what is to be worked internally and externally at the institution must collaborate with the various sectors of society to achieve goals and purposes. It shows its internal and external consistency, restating the key referent's value for the evaluation and accreditation processes, aiming for university processes continuous improvement.

The alignment with strategic axes above is part of the CNU proclaimed mission, which is a strength for higher education as they work along the same axes that must be addressed to results in favor of the country's goals compliance.

However, institutions must review their mission to ensure it holds the institutional activities' key elements to evidence the attribute it characterizes. A more detailed study would be valuable to reveal the alignment between the mission and quality, based on self and external evaluation.

Quality education and the protagonist's role on the Nicaraguan context

Quality education cannot be discussed without considering the protagonists in

Table 2

Key areas declared on the mission of universities

Interested parts	Key areas of the mission
Students	• Formation of professionals, leaders, men and women or people • Holistic, competent, entrepreneur, and innovative training • Formation centered on the person, family and community
Teachers	• Facilitate the learning centered on the person, family and community • Development of professional, citizens, and scientific competences • Propitiate the collective construction of knowledge • Promote humanistic, citizens, environmental, and ethical value principles • Generation of knowledge, science and technology through the investigation, innovation, and extension in equilibrium and harmony with Mother Earth • Management of scientific knowledge, innovation, technology and its diffusion
Society	• Pertinent formation of professionals that answer to the needs of society • Contribution to the economic, politic, social, environmental, and human development of the country and region • Compromised to the challenges of sustainable human development, the sociocultural, economic and environmental reality of the country • Articulation with the different social sectors for the development of the joint work • Application of the knowledge, science, technology and innovation on the different productive, environmental and social sectors of the countr
Quality	Mission • Provides integral, pertinent and quality education • Guarantees the securing of quality on the functions: teaching, investigation and social projection • Consolidation of the institution of reference for quality Vision • Accredited institution for the compliance of standards of quality on national and international level • University community compromised with quality on the development of different academic and administrative processes • Leader by their national and international academic excellence • Recognized for the quality and warmth on a national and international level

Own Work

the educational community. The different models of quality refer to participation, communication, processes and leadership. It is essential to prepare staff to meet the challenges and obstacles met by the institution or country, assuming to work with quality and human warmth.

In their contribution to quality, Deming (1989) stresses fourteen points to be considered for the company's path, which can be picked up for by higher education institutions.

Of the fourteen points, the following are exclusively dedicated to work with people:

→ Teach and train the best workers to improve work performance.

→ Adapt and establish leadership.

→ Eradicate fear for people to work confidently and give their best.

→ Remove slogans and chants for operators, substituting them for improvement actions.

→ Clear barriers depriving people of being proud of their work.

→ Stimulate people for personal improvement.

→ Make everyone work for the transformation, applying the method of planning, doing, checking, and acting.

These place people in the middle of quality and begin with the training for the competent operation of their functions. Moreover, it is vital to stimulate people for their own improvement. With leadership, a fundamental role is played for people to be the center of change and continuous improvement processes. Regarding this, philosopher Ishikawa proposed that quality should be conducted further of the own work, to life.

Leadership is key to accentuating the compromise in working and promoting quality control of the organization by the management. Deming (1994, p. 68) states the leader's work is to achieve the organization transformation.

The leadership of the Government of Reconciliation and National Unity in driving the national educational system towards pertinence and quality is notorious. It is present in the Political Constitution and laws of education. As well as in the educational institutions of the country, owning the National Plan to Fight Poverty and for Human Development 2022-2026 as a foundation. Moreover, leadership is assumed by people at the front of these institutions and through the strategic planification to guarantee pertinence and quality.

Education has experienced major changes and transformation on the various levels of the national education system. It was manifested with the Great National Literacy Crusade in 1980; the development of strategies for free, inclusive, intercultural, creative and innovative education; as well as strengthening the teaching and leader training in all levels; the model of education centered around the person, family and community; pertinent education and development of the investigation, innovation and availability of education resources.

Precisely, in the higher education subsystem of Nicaragua leadership is assumed by the CNU and CNEA, which, from the country' legal and normative

framework, promote actions for continuous improvement. Their work is on the Strategic Framework of Higher Education 2022-2023, leading the guidelines followed by Nicaraguan universities; likewise, with the establishment of the system of quality control and system of quality guarantee.

Teachers' pedagogical leadership begins from the act of education, on the role as mediators of learning centered on the person, family and community. In this process, quality and pertinence emerges as it is where interactions between the teacher and student, protagonist of their own learning, happen. Thus, leadership is key to lead staff towards strategic purposes and goals for the development and evolution of education for continuous improvement.

Consequently, it reiterates quality must be centered on people, implying for them to own and compromise with the mission, to comply with principles, values, objectives and strategies. Thus, they will consciously take the responsibility to carry out the work it corresponds to achieve quality.

Rodríguez (2017) indicates: We will achieve a positive attitude and mindset of all university community members, merging the gaze with critical, creative, purposeful, promoting dialogue and listening to ourselves of various outlooks to a situation or process we must change or modify (p. 4).

For this, the value of working according to the staff's quality regarding attitude and aptitude, of a quality culture in unity with the organizational culture is stressed. This is aimed to empower the institutional referent and focus on the processes' progress of institutional actions. As such,

it seeks conscious participation in the changing processes.

Most would believe it is utopia or romanticism, but quality in our institutions must be viewed with a new thought, given that, if we want quality in what we do, we must start with human quality. As Berman (1999) expresses, we must be capable of transforming our reality from a new thought, a new organization full of human hearts. This must be quality, with human faces and open hearts to change.

Conclusions

Quality in education entails a strategic gaze which requires the joint work of these institutions' actors and protagonists. Thus, engagement and communication as key axes to facilitate appropriation, pertinence, and compromise of all; from it comes the need of establishing a culture of quality in institutions.

Quality in universities takes the declared in their mission, as it is their reason of being and contains various axes of work, principles, and values, letting open the vision's guidelines, strategic objectives and actions to begin from the strategic planification. From the mission, it is clear the compromise of the institution's actions with quality and pertinence.

The people who form the institution or organization invigorate quality. This pedagogical element begins with the quality of people, compromise to the work they have to do excellently. As people who internalize institutional referents, engage and communicate, contributing to the steady improvement of institutional actions.

Leadership on the driving processes has been fundamental and aimed to the collaboration to merge efforts and resources for the educational subsystems, MINED, INATEC, CNU and SEAR. This articulated effort has significantly influenced the education achievements, which has as reference the educational model centered on the person, family and community.

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Pedagogical accompaniment as indicator of quality in education

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Acompañamiento pedagógico como indicador de la calidad educativo

Abstract

Pedagogical support is a key element in improving the quality of education. This research describes the pedagogical accompaniment in the careers that are part of the piloting of the competency-based curriculum at UNAN-Managua. Regarding the methodological aspects, the research is qualitative, the sample is composed of the four careers of the Faculty of Education and Languages that started the piloting of the competency-based curriculum approach in 2020; the techniques to be applied are the survey, interview, focus group and classroom observation. As for the analysis of the results, content analysis, data cleaning and triangulation were carried out. The results of the research allowed us to know the development of the pedagogical accompaniment in the careers under study, the feelings of the teachers about it and the actions taken by the university to accompany the educational process. The results show that the pedagogical accompaniment is not very evident in the classroom and the feedback as part of it is not visualized in the careers. The accompaniment is centered on the fulfillment of the didactic planning.

Keywords: education, pedagogical innovation, pedagogical support, competency-based curriculum, didactic models.

Resumen

El acompañamiento pedagógico es un elemento clave para la mejora de la calidad educativa. En la presente investigación se describe el acompañamiento pedagógico en las carreras que forman parte del pilotaje del currículo por competencias de la Universidad Nacional Autónoma de Nicaragua, Managua (UNAN-Managua). Con relación a los aspectos metodológicos la investigación es cualitativa, la muestra está compuesta por las cuatro carreras de la Facultad de Educación e Idiomas que iniciaron el pilotaje del enfoque curricular por competencias en el año 2020; las técnicas aplicadas fueron la encuesta, entrevista, grupo focal y observación a clases. Respecto al análisis de los resultados, se realizó análisis de contenido, limpieza y triangulación de datos. Los resultados de la investigación permitieron conocer el desarrollo del acompañamiento pedagógico en las carreras en estudio, los sentires de los docentes respecto a este y las acciones que realiza la universidad en función de acompañar el proceso educativo. De esta manera, se revela que el acompañamiento pedagógico en las aulas de clases es poco evidente y la realimentación, como parte de este, no se logra visualizar en las carreras. El acompañamiento está centrado en el cumplimiento de la planificación didáctica.

Palabras clave: *educación, innovación pedagógica, acompañamiento pedagógico, currículo por competencia, modelos didácticos.*

Introduction

Quality education is a wide concept referring to the educational system's proficiency, efficiency, and relevance in its ensemble. Equally, it entails results achieved by students in terms of learning, personal growth and life education, effective institutional administration and response society's demands regarding education of integral professionals.

This research was descriptive about the pedagogical accompaniment carried out at Universidad Nacional Autónoma de Nicaragua, Managua UNAN-Managua, on the degrees part of the competency-based curriculum's pilotage: Educational Informatics, Hispanic Language and Literature, Natural Sciences, and Social Sciences. It aims for this analysis to be an necessary element to improve the quality in education; once acknowledged the current phase of the degrees' accompaniment, it moves to the indicators of quality's analysis in the degrees' curriculum and reclaims the established on normative documents of Nicaraguan higher education where is denoted the connection of teaching, investigation, innovation, and extension, as well as internationalization, interculturality, and culture of peace, among others, are vital elements on the micro-planification to revitalize learning and guarantee quality education.

It allows us to answer the question of how does the pedagogical accompaniment adds to quality in education of the pilotage

competency-based curriculum's degrees of this study house? Thus, it is necessary to know the academic-administrative structure: how it is done, in which moment, and who carries out the pedagogical accompaniment.

Materials and methods

The research applies a qualitative approach, centered on the insight and description of pedagogical accompaniment undertaken on the pilotage of the competency-based curriculum's degrees at UNAN-Managua. As an educational field research, and due to the depth of the study object, it is descriptive. It does not seek causal explanations or relation, but the grasp and documentation of variables and indicators.

The investigation is cross-section, conducted at a specific moment. Moreover, the instruments' application was done at a fixed moment.

Data collection techniques

The applied instruments were: interview to the coordinators of four degrees and grade director, surveys to students and focus groups with teachers responsible of the Integrator Componentes of each class of the four degrees of pilotage, class observation and literary review. The last ones granted in-situ verification and view the systematic method in which specific items of investigation, innovation, extension, internationalization, interculturality, peace culture and others enhance an integral education are developed.

Information search

Data collection was done through academic search engines, academic

databases, digital libraries, official websites, among others. Boolean operators were applied to filter searches and application of APA regulations.

Data collection

Instruments for data collection were designed, such as interviews' surveys, survey questionnaire, observation guide, focus group guides, and literary review.

Data processing and analysis

Analytical tests corresponding with data were applied to give strength to their analysis. Content analysis, data cleansing, and triangulation data.

Analysis of quantitative data was done using statistical software SPSS. Specifically for the survey.

With the obtained results, it was proceeded with the discussion of results.

Results and discussion

Pedagogical accompaniment is an academic action to strengthen the educational program. It is designed considering the academic and administrative aspects with educational act's implications. It describes the applied interviews' product to the director of Undergraduate Teaching, teachers career coordinators, responsible of integrators, surveys to students with foundations on pedagogical literature.

Pedagogical successes are not supervising or ensuring teachers and students are in the classrooms or spaces where it corresponds, according to the field or area of knowledge of subjects.

The objectives, instruments, participants, how, and at which moment it will take place must be clear.

The UNAN-Managua, as one of the largest universities nationwide, strives to secure quality in education. Thus, pedagogical accompaniment is raised as a strategy to be permanently developed due to the logic of competency-based curriculum approach. Thereafter, the current state of the pedagogical accompaniment on the pilotage degrees of the competency-based approach on this Higher Education Institution is described.

From the Undergraduate Teaching Department at UNAN-Managua, it is noted pedagogical accompaniment has an internal model, not individualized on the degrees part of the pilotage but carried out with all the ones requesting it. This is a constant companion and boosts working together with the faculties' authorities and degrees, given the accompaniment can be done yearly or semi-annual on different degrees.

The purpose of the accompaniment at university is attend, observe the educational process and contribute elements for the continuous improvement of educational practice. The teaching department works with deans and department directors to guide the pedagogical accompaniment. Therefore, once recognized the successes and failures during the educational process, the actions for improvement are stablished.

As a product of the previous work dynamic, it is stated guarantors of the accompaniment are departments' directors and degrees' coordinators,

together with the teaching community and, mainly, teachers responsible for the integrating components must plan this process. Execute and follow up the integrating action to allow the development of competencies stated by year in each degree.

The presence of academic authorities in reflexion spaces about pedagogical accompaniment unveils the interest for continuous search of quality education, an important finding on the study and evidenced an accompaniment starting from an institutional structure lead by academic authorities and dynamized by degrees' collectives. This coincides García (2012) as "an operation in compliance with the principles, rather than limiting, ensures clear directionality, consensual ethical horizon and institutionalization of the spaces, programs, and projects linked to accompaniment" (p. 17).

It is important to recall the four degrees from the pilotage of the competency-based curriculum approach obtains the same treatment as other degrees in terms of pedagogical accompaniment. Truth is, from Undergrad Teaching, more attentive of these to align and analyse the success and failures shared with other degrees for improvement purposes. This is punctually related to how practices and graduation modality in 2023 will be carried out.

Degrees' coordinators refer they obtained continuous pedagogical accompaniment on behalf of the Direction of Undergraduate Teaching on the creation of curricular designs for the competency-based approach and guided them on how to carry out the accompaniment on academic unities. However, during the development

of educational process is not performed from the direction, since each degree implements the accompaniment while trying to comply with the established on the competency-based curricular approach. Equally, degrees' coordinators mentioned this accompaniment is applied as follows:

In Hispanic Language and Literature, the coordination explains accompaniment is done by the teacher in charge of the level, the same of the semester's integrator component. They accompany teachers in charge of other components, aiming to ensure the integrator strategy. The coordination, for its part, guarantees the accompaniment is carried out; if any difficulty with students or teachers exists, it is sought to be solved together. Also, if necessary, changes on the components (objectives, didactic strategies or topics) are analysed and recorded.

In Educational Informatics, coordination refers at the start of the semester is scheduled with each year's responsible for the integrated didactical planning, and assistance is pursued by all teachers on meetings. This is aiming to guaranteeing the competencies defined by level's fulfilment, development of integrator strategy by semester, planification of the assessment period and elaboration of a Basis for Guiding Action (Base Orientadora de la Acción, BOA); this last if necessary.

Once the semester begins; periodic checks are done to ensure compliance with teacher's plans. This through the virtual platform of Moodle, where a follow-up is made to the development of planned contents, creation of necessary didactical resources, evaluation, and assignment

of grades on time. Upon the semester's completion, compliance with the didactical planification and integrator products elaborated by students is evaluated.

The coordination of Natural Sciences states accompaniment is performed when the integrator teacher requests it, or students expose a difficulty with a teacher. In the degree, regular accompaniment is not done as the teacher coordinator has classes when the meeting is developed. Yet, on the week, ensures meetings with teachers in charge of levels; also, didactical planning, development of the integrator strategy and solve the difficulties which may arise during the educational process.

Social Sciences' coordination adduces the accompaniment is firstly done with teachers responsible for integrator components. Generally, it is worked in function of the integrator strategy, the six-month planning is oriented. Thus, the same teachers operationalize and guide the didactic planification with teachers of other components. They oversee the semester's evolution, keeping a steady communication with the degree's coordinator.

Generally, communication between the degree's coordinator and level teachers, regarding the semi-annual planning, display the existence of coordinated work. This has harmony with Martínez y Gonzáles (2010) referring pedagogical accompaniment is conceived as a non-lineal process, rather than holistic, integral, and interdisciplinary. Moreover, emphasize it comes from constructivist conjectures and socio-critical theory of knowledge building; in which reality is the starting point, and the agreement

of political-pedagogical actions. This is because the human being creates its own reality through their experience, intuition, thought, and performance, comprising the result of individual and collective meaning.

By consulting teachers responsible of the four degrees' integrators, they manifest they do not receive pedagogical accompaniment in classrooms, but follow-up by the coordination about the didactic planification for each level does exist. Also, reiterates the expressed by the degrees' coordinators according to the work done as integrators responsible; they guide and ensure each component's didactical planification for the fulfilment of the integrator strategy.

Teachers responsible of the components of Integration Practices mention the creation of conducting pedagogical accompaniment to others. In the following figure the form

in which is performed in each degree is described. See figure 1.

The teachers responsible of the integrator components and coordinators of degrees, carried out in the encounter modality (Natural Sciences and Social Sciences), convey struggles to perform the pedagogical accompaniment. Owing it to teaching loads on the day they perform the encounter (Saturday). The four degrees' coordinators coincide in the insurance of didactical planification and constant communication with level responsible to secure adequate development of the educational process.

Cardemil, Maureira & Zuleta (2010) propose five modalities or accompaniment forms, finding coincidences with three of the five suggested:

Class preparation, referring to didactical planification.

Figure 1
Accompaniment realized by the responsible of Integrator Practices

Own Work

Essays & articles: Pedagogical accompaniment as indicator of quality in education
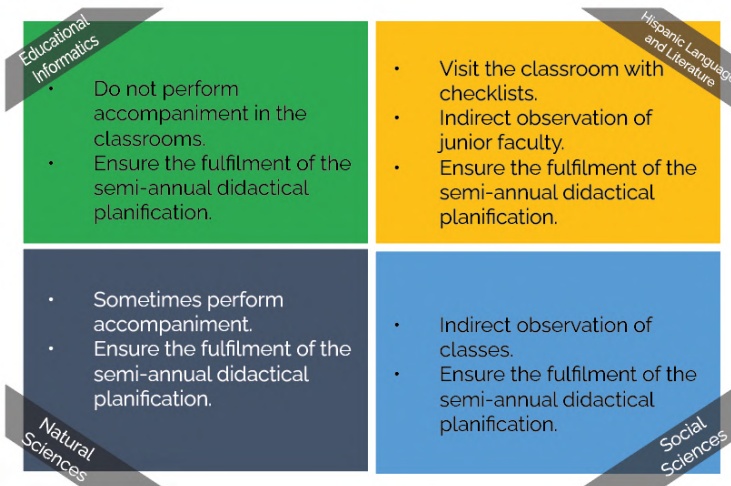
Workshop for the review of knowledge and didactical strategies of teaching, contextualizing, it is performed on the meeting with the degrees' coordinators, responsible of integrator components and level who decide how the semester will go.

Non-participant observation, done, at times, by teachers' coordinators of degree of Natural Sciences and Social Sciences.

Conversely, when consulting students of the four degrees, if during class teachers are accompanied by someone else, most in the degrees of Hispanic Language and Literature and Educational Informatics indicated not noticing someone external on classes. Students of Social Sciences and Natural Sciences pointed out sometimes the teacher is accompanied by someone else. However, during the class observation, no companion was seen in any of the four degrees; but it does exist coincidence between the affirmation of teachers and students.

To summarize, pedagogical accompaniment developed in the degrees part of the pilotage is the same for all degrees on the Faculty of Education and Languages and others from the University. The Direction of Undergraduate Teaching oversees guiding and evaluating the accompaniment done in the degrees, also accompanying when requested directly. This establishes mechanisms and strategies of improvement for the educational process, together with faculties' authorities.

The competency-based curricular approach has integrated its own system of pedagogical accompaniment. This is directly implemented by academic unities with directors of department, degrees' coordinators and responsible of levels as responsible who, simultaneously, oversee integrators by semester. Teachers responsible of integrators ensure the semi-annual didactical planification for the fulfilment of the assessment period and integrator strategies. Moreover, follow situations presented during the semester that could affect students or teachers.

So far, the pedagogical accompaniment in the degrees is deemed to be done impartially. Per the established on the Accompanying Strategy at UNAN-Managua and the findings of this study, it is determined this ensures the didactical planification. Also, the difficulties presented during the semester are solved. Yet it is vital to establish actions to integrally secure it.

Consequently, the role of a pedagogical companion in the degrees, completely, cannot be identified as is still necessary to dynamize the accompaniment in a classroom setting. This with the aim of giving feedback and watch over the application of the semi-annual didactical planification, is performed by teachers.

Four years have transpired since the competency-based curricular approach has been implemented, evidencing a significant work on the potentization of educational process. Yet, the need of enhancing the pedagogical accompaniment as key element to dynamize and improve pedagogical innovation from the didactic micro-planification is identified. The accompaniment could have a meaningful improvement if developed to detail the established strategy at UNAN-Managua for this purpose. Additionally, to implementing

approaches of Acuña, Bejerano, et al. (2017), Martínez & Gonzáles (2010), Cardemil, Maureira, et al. (2010), See figure 2.

The degrees' coordinators mention the need of reinforcing the pedagogical accompaniment in their degrees, specifically in classrooms; initiating with raising awareness about the importance of the accompaniment and organize by degrees multidisciplinary groups of companions who collaborate in this process. Also, express the need to take ownership of the already existent strategy for this purpose in university.

Teachers also agree accompaniment is key for the development of pedagogical innovation. Outcomes of good practices could reinforce strategies which allowed getting pleasant results in the educational process and access a validation process with other groups, aiming to search for continuous improvement, getting high levels of educational innovation. It is valid to remember educational innovation is a set of ideas, processes and strategies, systematized, seeking to introduce and trigger changes in the educational act (Cañal de León, 2005).

It becomes essential to cultivate our pedagogical practice with the goal of addressing the demands of professionals with high competencies focused on knowing, knowing how to be, knowing how to do, and knowing how to coexist. Thus, self-evaluation of the educational processes is key; it enables to establish actions of improvement to implement at university; on a short, medium, and long term in community, with sense of longing, harmony, and love for a quality education.

Finally, considering pedagogical accompaniment is an indicator for the progress of quality in education, it becomes essential to work based on it, as it is not enough to only secure the didactical planification. Accompaniment has other implication such as feedback, instruments preparation, workshops or other training mechanisms for the faculty education, establishment of actions to fulfil the one who accompanies and the accompanied, always keeping an active and effective communication between them.

Conclusions

Analysing the results in the pedagogical accompaniment as a quality element in

Figure 2
Pedagogical accompaniment definition
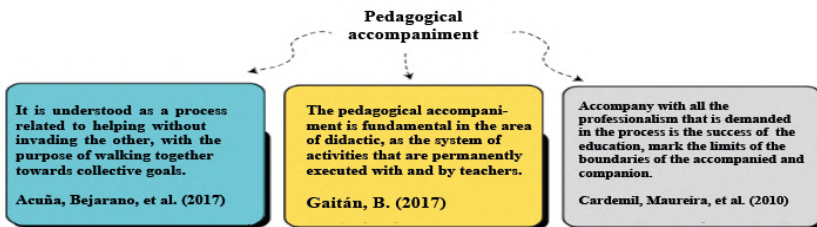
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education in degrees of the competency-based curriculum pilotage at UNAN-Managua, are as follows:

UNAN-Managua has defined as strategy of permanent pedagogical accompaniment requiring to be enhanced, specifically corresponding to classroom accompaniment.

Pedagogical accompaniment in the pilotage degrees at UNAN-Managua have the same management as other university degrees. The one variation is since they are leading degrees, it is pending to guide the new moments requiring them, such as practices or graduation modality.

Teachers have definite knowledge of a pedagogical accompaniment's implication and refer the need as a fundamental element for the improvement of quality in education.

Guarantors of the pedagogical accompaniment in degrees of study are directors of departments and degrees' coordinators to dynamize with teachers of level in the educational act.

In the four degrees of the pilotage, pedagogical accompaniment is similarly done, all coinciding on the assurance of didactical planification.

The pedagogical accompaniment in the UNAN-Managua from the micro planification is a fundamental element ensuring quality in education at this study house. Being aware the search of it is indelible, filled with love, enthusiasm, and compromise with the education of integral professionals for our country.

Results of this investigation will allow decision-makers at UNAN-Managua to analyse strategies the university could apply for the continuous improvement of accompaniment, already done and has had good results, but could be better in light of the authors' considerations and own strategy defined by the university.

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Inclusive and quality education development for the full growth of people with disabilities in Nicaragua

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Formación profesional inclusiva y de calidad para el desarrollo integral de las personas con discapacidad en Nicaragua

Abstract

The National Technical and Technological Institute has been guaranteeing the holistic development of people with disabilities in Nicaragua through inclusive and quality vocational training. This research presents results, with a qualitative approach, determined that people with disabilities have opportunities for technical training, which allows them to be active subjects in the labor market and in the country's entrepreneurship system. This has been possible thanks to national human development policies and plans, whereby establishing inclusive education as a work model that has been implemented since 2007. Interviews, focus groups and documentary analysis confirm sustained progress and achievements, with the perspective of continuing promoting care with quality and warmth of training programs and projects from inter-institutional coordination, for the greater wellbeing of people with disabilities and their families.

Keywords: human development, people with disabilities, vocational training, social inclusion, quality of life.

Resumen

El Instituto Nacional Técnico y Tecnológico ha estado garantizando el desarrollo integral de las personas con discapacidad en Nicaragua a través de la formación profesional inclusiva y de calidad. En este texto se presentan los resultados de una investigación con enfoque cualitativo en la que se determinó que las personas con discapacidad cuentan con oportunidades para su formación técnica, que les permite ser sujetos activos en el mercado laboral y en el sistema de emprendimientos del país. Esto ha sido posible gracias a políticas y planes nacionales de desarrollo humano, que establecen la educación inclusiva como un modelo de trabajo que se implementa desde el año 2007. Los datos obtenidos de entrevistas, grupos focales y análisis documental confirman los avances y logros sostenidos, con perspectiva de continuar potenciando la atención con calidad y calidez de programas y proyectos formativos desde la articulación interinstitucional, para mayor bienestar de las personas con discapacidad y sus familias en Nicaragua.

Palabras claves: Desarrollo humano, personas con discapacidad, formación profesional, inclusión social, calidad de vida.

Introduction

In Nicaragua, inclusive and quality vocational development for people with disabilities is guaranteed. According to Law 763, Law on the Rights of Persons with Disabilities (2011), they have the right to fully and effectively participate in programs and projects implemented by the National Technical and Technological Institute (Instituto Nacional Técnico y Tecnológico, INATEC), enhancing their labor and entrepreneurship competencies.

Results of a qualitative investigation analyzing advancements and achievements of the technical training of people with disabilities, during the period of 2007-2023, are presented. The formative model implemented and aligned to national and international policies is highlighted, as well as transformational experiences in protagonists' life, who, by having the chance of training themselves, have gotten a job or started their own businesses.

Holistic development in this research is raised as positive changes in people with disabilities, including the adoption of thinking based in the enforcement of their rights, assuming knowledge, attitudes, and actions transferred in INATEC's vocational development model, engaging as active subjects, compromised with their own transformation.

In its National Competency-Based Model of Technical and Vocational Development Education (2018), INATEC established inclusion as a priority and transversal axis for the implementation of strategies guided to employment insertion of people with disabilities, through technical and vocational development in an individually and collectively (p. 5).

Epistemology of inclusive and quality vocational development in Nicaragua

Inclusive and quality vocational development has as strategic framework inclusive special education in Nicaragua. It demonstrates a holistic and compromised approach with inclusive education, encompassing national and international operationalized policies territorially, with the aim of ensuring equitable access to education for all citizens.

The Government of Reconciliation and National Unity (Gobierno de Reconciliación y Unidad Nacional, GRUN) prioritizes inclusion in all their policies and programs, reflecting a compromise with the population's integral wellbeing, substantiated in the Millennium Development Goals (MDGs), Sustainable Development Goals (SDGs), as well as the Convention on the Rights of Persons with Disabilities. These integrate a holistic approach with the goal of guaranteeing equality of opportunities in free education at all levels. National development plans from 2007, and 2026 projection, prioritize inclusive and quality education as a key

element of social transformation and full human development of Nicaraguans.

Inclusive and quality vocational development

Vocational development aligns with the fourth SDG, guided to inclusive and equitable education for all. From this overall strategic approach, Law 1063, INATEC's regulatory law, are progressive initiatives applied from the qualification, complementation and technical specialization, as well as worker certification with experiences and without title.

Inclusive and quality vocational development are operationalized in the Institutional Strategic Plan 2022-2026, therefore, the INATEC defined reinforcing joint work with the Cabinet of Power of Persons with Disabilities, directed to labor insertion and entrepreneurships development (GRUN, 2021, p. 93).

Programs and strategies of vocational development answer to guidelines from the National Plan to Fight Poverty and for

Figure 1

National plans of human development and foundations of the inclusive and of quality vocational training
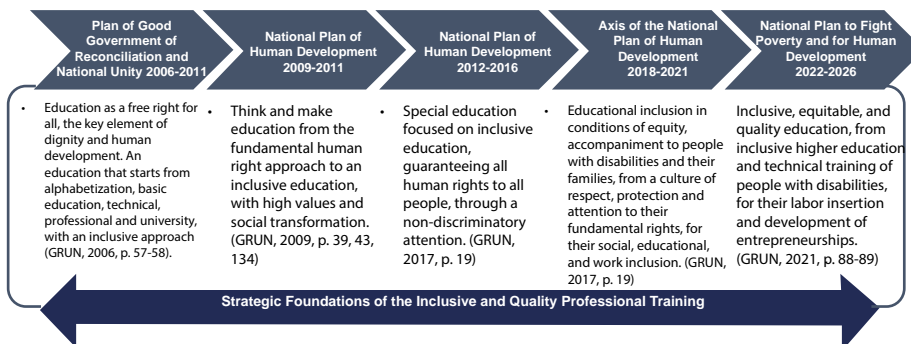
Own Work adapted from GRUN, 2006, 2009, 2013, 2017, 2021.

Human Development 2022 – 2026, which guide attention with quality and solidarity to people with disabilities from an essential focus, as a national priority, amplifying coverage and educational equity for their technical development and labor insertion and entrepreneurship (GRUN, 2021).

People with disabilities' integral development

The National Competency-Based Model of Technical and Vocational Development Education states the formative process is an opportunity for holistic transformation, guided to becoming aware until improving levels and vocational quality to contribute to Nicaragua's economic and social development (INATEC, 2018, p. 6).

This perspective answers to Venegas's (2022) approach, who states education, as a vital process in people's holistic development, must ensure conditions to improve individual and social performance from basic needs to the motivation of applying and use of competencies and capacities with the aim of getting decent wellbeing levels.

Programs and strategies of inclusive and quality vocational development have been guided from the perspective of people with disabilities' holistic development, who have acquired competencies and capacities for a dignified life, allowing them to be achievement examples in their families and communities.

Materials and methods

The investigation took the qualitative approach. Escudero & Cortez (2018) mention this approach records studied events or phenomena, applying techniques like interview, focus groups, and documentary analysis. Likewise, the qualitative method was applied. Cadena-Iñiguez et al. (2017),

Figure 2

Perspective of the holistic development in the inclusive and of quality vocational training
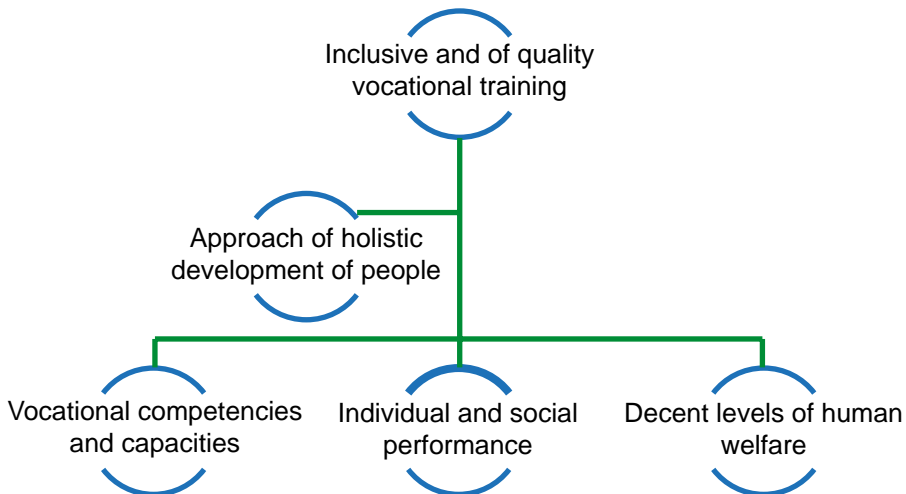
Own Work complied by authors based on the datebase if INATEC, 2018.

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express it analyzes the stage and people from a holistic perspective, considering aspects related to experiences and practices of study subjects, to understand from their own reference framework.

The research was supported by the interpretative paradigm, through phenomenon elucidation and situational analysis. This type of research is founded on the reality comprehension, deepening in the "meanings of subjects in mutual interaction and has full sense in the culture and in the peculiarities of everyday life" (Ricoy, 2006, p. 17). As of the present paradigm are analyzed "experiences for the world understanding and recognize in the configuration of subjectivities, the influence of historical, culture, and social aspects" (Beltrán & Ortiz, 2020, p. 9). Result analysis as from this paradigm allowed to identify changes in people with disabilities who have participated in programs and projects of inclusive and quality vocational development implemented by INATEC.

Results and discussion

Implementation of the model of inclusive and quality vocational training for people with disabilities in Nicaragua

Training and labor inclusion for people with disabilities.

Training and labor inclusion for people with disabilities implemented by INATEC is over the base of the model of Learn, Innovate, Succeed (Aprender, Emprender, Prosperar, AEP) and Competency-Based Model of Technical and Vocational Development Education (Modelo de la Educación Técnica y Formación Profesional Basado en Competencia, Modelo ETFP), which requires training qualified technicians, both technically and in values enforced an entrepreneurial and peaceful culture, contributing to prosper as person, family and community (INATEC, 2018, p. 6), with programs for labor insertion and abilities growth for socio-productive undertakings (GRUN, 2023, p. 14).

INATEC ensures development and labor inclusion to people with disabilities in all the country through strategic partnerships with the Cabinet of the Power of Persons with Disabilities and State institutions, consistent with Law 763:

The State through the Ministry of Work, National Technological Institute, Nicaraguan Institute of Social Security and other public institutions, will support the labor insertion of people with disabilities, through the policies of technical and vocational training individually and collectively. (Ch. 4, art. 35)

Figure 3
Models of the training and labor inclusion of people with disabilities from INATEC
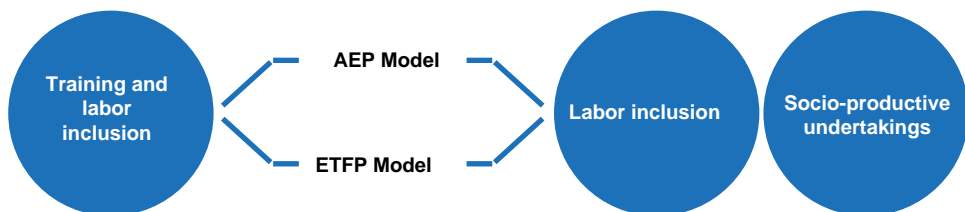
Own Work gathered from GRUN, 2023: INATEC, 2018.

To comply with this mandate, INATEC has competent and updated teachers who apply learning and special methods, and relevant pedagogical tools. Also, curricula and syllabuses are ensured for inclusive practices enabling actors' engagement and protagonism in the educational process, endorsing competencies enhancement for people with disabilities employability and allows them to get job opportunities or boost their socio-productive entrepreneurships.

According with the interview results, it was identified experiences of protagonists who; after going through their development process, they have started small businesses such as barbershops, wardrobes elaboration and design, piñatas, jewelry, fruit-based wine and vinegars, among other products. Labor inclusion of people with disabilities has been a personal and family positive experience.

The history of a 19-year-old young man with psychomotor cerebral palsy, Illustration Techniques protagonist in the Cultural and Polytechnic Center José Coronel Urtecho, Managua is an outstanding case. He shares "this experience of studying and acquiring abilities will allow me to find a job, which is great". Also, states: "my goals are getting to be a graphic design professional" (personal communication, July 20, 2023).

In the research, another experience of a man of 45-year-old with physical motor disability was identified, Maintenance of Auxiliary Engine Systems protagonist on the Francisco Rivera "El Zorro" Technological Center, Estelí. He shares his motivation: "the one who doesn't study is because they don't want to, but to me nothing stops me from studying, because I like this". He highlights: "Nothing prevents me from anything, because I can get under a car to work, there is no need for me to have two legs" (Personal communication, May 5, 2021). The protagonist manifests his future project is to install his own mechanical workshop to support more families by giving jobs to people. Likewise, expresses his interest to keep studying.

It also stresses a woman's experience, senior citizen and with visual impairment, different courses protagonist: Nectar and preserves production, marmalades, chillies, pickles, Wines elaboration and chiropractic massages, as well as Basic computation with Jaws application for blind people, in the Monseñor Benedicto Herrera Technological Center in Managua. Regarding this, she expressed: "These courses have not only helped me to be independent, but also in the organizational and politic development, because I received computer science, very important for my personal life and the councilor work I'm currently performing" (Personal communication, March 5, 2020).

This example reflects the determination of people with disabilities, who take advantage of the opportunities offered by INATEC to grow and excel in life.

A curriculum suitable for people with disabilities

The National Technical and Technological Institute has been in an evolutionary transformation process, aiming to answer the demand of national population and productive sectors. Between the most significant aspects achieved in the last 16 years are the elaboration of formative modules, didactical guides, primers, and vocational development offer manuals, with contributions and demands from sectors of people with disabilities in the country.

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The institution has been creating an inclusive curriculum applied to people with disabilities' context, which requires characteristics part of the surroundings and daily activities for the dignification from their rights restitution enabling them to labor and productive inclusion.

Delors (1994) arises a curriculum must address cognitive, emotional and creative aspects above the foundation of:

Learning to know, namely, acquiring comprehension instruments; learning to do, to being able to influence over their own surroundings; learning to live together, to participate and cooperate with others in all human activities; lastly, learning to be, a fundamental process includes elements from the three above. (p. 1)

These aspects, referred by Delors, have been retaken in the curricular process and applied on different professional development programs and strategies for the attention of people with disabilities with quality and warmth, originating from the countryside and city.

The curriculum pertinence has been guaranteed by the institutional compromise of addressing people with disabilities' needs, who participate not only in the development, but also courses design identified collaboratively, consistent with the *National Competency-Based Model of Technical and Vocational Development Education*, guiding curricular updating, inclusion of disability as transversal axis and attention to diversity (INATEC, 2018).

Empirical workers with disability certification

The certification of labor competencies is a free process INATEC develops to assess and certify abilities, skills and knowledge a person must meet for a function or specific labor. Particularly, the institution has referents and evaluation instruments, and certification implemented for people with disabilities.

Among its results, instructors and interpreters in Nicaraguan sign language have been certified in reading and writing in Braille system, orientation and mobility for blind people, visual guide for blind people from different territories. All these efforts have been accompanied by the Cabinet of the Power of Persons with Disabilities. The evaluators' additions to the guild have been determinants in instruments creation for their application.

Among the conducted interviews, a mother's experience with hearing impairment is mentioned, certified as instructor of Nicaraguan Sign Language, who shares: "I feel joyful for receiving this certificate to work in the future already accredited, but I also have the desire to continue studying" (personal communication, December 19, 2018).

Specialization for the attention with quality and warmth to people with disabilities

In 2023, Nicaragua has been placed in the vanguard on attention to people with disabilities. This is displayed on the creation of the new Centro de Capacitación Comandante Carlos, national referent center for specialized development on quality and warmth attention for people with disabilities, where public workers, territory and Sandinista Youth are being taught to

contribute to inclusion in educational and community programs.

A teacher of the Centro Tecnológico Simón Bolívar was interviewed, trained on Support Tools for People with Visual Impairment, who states the value of having a guide to support people with disability who study in the center (personal communication, October 26, 2023).

Likewise, a public worker with disability, who has participated on the coordination of the education in this center, during an interview manifested:

This work, that we have been doing for the center's operation and strengthening of public workers' capacities, has been very important. We thank the government for guaranteeing these rights and facilitating growth and technical development. It is a step forward to improve the attention of people with disabilities. (personal communication, July 3, 2023)

Study results show the integral growth progress towards public workers, who expressed their compromise of sustaining attention to people with disabilities, applying the acquired knowledge from instances where there is an opportunity to serve.

Vision of collaborative work for attention to people with disabilities

The Inclusive Professional and Quality Education is aligned with the growth line and transformation, rooted on the integral model to reduce poverty and inequalities. It has human beings, families and communities at the center. Likewise, it is grounded on the model of shared responsibility, through the collaboration between educational subsystems, which promote, manage and develop educational inclusive plans and projects.

INATEC enacts programs and strategies of professional growth, aiming to answer people with disabilities' needs, coordinated with the Cabinet of Citizens Power for Persons with Disabilities and GRUN institutions, from which can be mentioned the National Education System conformed by the National Technical and Technological Institute (Instituto Nacional Técnico y Tecnológico, INATEC), Ministry of Education (Ministerio de Educación, MINED), Regional Autonomic Educational Subsystem (Subsistema Educativo Autonómico Regional, SEAR), and National Council of Universities (Consejo Nacional de Universidades, CNU), along with Ministry of Health (Ministerio de Salud, MINSA), Ministry of Youth (Ministerio de la Juventud, MINJUVE), Ministry of Family (Ministerio de la Familia, MIFAM), Ministry of Work (Ministerio del Trabajo, MITRAB), Ministry of the Interior, Procuracy Office for the Defense of the Human Rights (Procuraduría para la Defensa de los Derechos Humanos, PDDH), and other institutions to comply with Law 763, Law of the Rights of People with Disabilities.

Advances and achievements of inclusive and quality educational learning in Nicaragua

Attended population: in the period 2007-2020, 25,000 people with visual, auditory and physical motor disabilities were attended (El 19 Digital, August 25, 2020). Between 2022 and 2023, a total of 28,252 persons with different disabilities and public servers of the country received training.

Didactic documents created and applied for the attention of people with disabilities, instructors, interpreters, and public servers: On the literary review the identification of training modules, didactic guides, passbooks, manuals and audios for the development of courses and certification of work competencies were found, which comply with needs and expectations of people with disabilities requirements. Requested themes are mainly guided to commerce and agricultural sectors and forestry services, as well as specific development offer for public workers and certification of working competencies for people with disabilities.

Strengthening the creative, entrepreneur and victorious economy of people with disabilities. Complying with the National Plan to Fight Poverty and for Human Development 2022-2026, INATEC advances with "vocational training people with disabilities for their labor insertion and entrepreneurships development" (GRUN, 2021, p. 93). Interviews and literary review show results of the creative, entrepreneurial

and victorious economy of people with disabilities, once strengthened their competencies, they have entrepreneurships which ensure an income and improved their personal and family economy.

Promotion of people with disabilities wellbeing through innovative initiatives. Development of an inclusive and quality professional training is implemented simultaneously with INATEC's permanent process, which promotes equality and opportunities for everyone, with the teachers and students' engagement of technological centers, generating ideas of creative and innovative projects to address people with disabilities' reality.

It was identified the platform of Innovation and Technologies Hackathon Nicaragua, in 2017, 2020 and 2023, multidisciplinary teams participating included the theme of disability. Interviewing a first-place student of the winner project Elemental Brainers, in 2017, expressed: "We developed a virtual interpreter for deaf people so they can, with this application, record what is being said by

Figure 4

Approach to the creation of the Training Center Comandante Carlos

Courses, seminars, talks, diploma courses and specialties.

Specialization and development of the capacities for the adequate attention, communication and inclusion of people with disabilities on educational and communicative programs.

Strengthening of the conscience of the right and social inclusion in the family and community, to stimulate and develop capacities of children, youth, and adults with disabilities.

Construction of a culture of inclusion, respect and dignified treatment with disabilities

Public Servers, Territorial Community Layout, and Sandinista Youth

Own Work

Table 1

Themes demanded by people with disabilities, instructors, interpreters and public workers.

Themes with demand by people with disabilities from the commerce and service sector	Themes aimed to public workers of the GRUN institutions
• Administration of Small Businesses	• Right and dignity of people with disabilities
• Paper and foamy crafts	• Promotion, prevention and integral attention to people with disabilities
• Computation with Jaws application	• Introduction to professional rehabilitation
• Haircut	• Assertive communication with people with Down Syndrome
• Creation of floral arrangements	• Accompaniment and social inclusion to people with autism spectrum disorder
• English A1 Breakthrough	• Nicaraguan sign language
• English A2 Waystage	• Tools of support
• Frame platering	• Basic course of reading-writing of the Braille System
• Camba handcraft	
• Operational system and office automation	
• Embossing techniques on aluminum	
• Relaxing massage	
• Massotherapy	
• Application of office automation with screen reader	
Themes with demand of people with disabilities on the agricultural and forestry sector	**Themes for the certification of labor competencies to instructors and interpreters**
• Vegetable cultivation	• Braille System instructor
• Soy-based food processing	• Orientation and mobility instructor
• Elaboration of wine and vinegars from tropical fruits	• Nicaraguan sign language instructor
• Fruit and vegetable processing	• Nicaraguan sign language communication system interpreter
• Nectars and canned food processing	
• Organic fertilizer and bio-fertilizing elaboration	

Own Work

speakers and this application translates it to sign language" (personal communication, Novembre 27, 2017).

Other projects were identified as "Mi expression cuenta", consists on facilitating learning the language and literature of people with hearing impairments. This won the second place of the Starup category in 2020. Also, Tux Boy project can be quoted, which consists in a Web and Android application. It allows people with disabilities to find a space to receive psychological attention, therapy and information about clinical pictures before a disease. It was the third-place winner in the Amateur category.

Conclusions

Since 2007, improvement actions for the attention to people with disabilities have been implemented, related to national coverage, offer growth, updating formative offers in attention to demands of people with disabilities' associations and organization.

Likewise, together with MINED, it has been promoted the attention to people with hearing impairment through in-person courses development, such as Basic Course of Nicaraguan Sign Language aimed at administrative teachers and directives of technological centers.

Inclusive professional training and quality is simultaneous with the implementation of talks about sensibilization about Law 763, Law for the Rights of People with Disability, for the strengthening of the conscience to the attention of protagonists and appropriation of this legislation, aiming to create inclusive spaces on technological center.

Formational programs and projects show

positive results in people with disabilities' life, who, after learning, have found opportunities for work or created an entrepreneurship for their family economy's improvement.

Advances and formational present their alignment with national policies and plans of human development, aimed at inclusive education as a transversal model of all the National Education System's task. Also, it is established on Law 1063, INATEC's Regulatory Law, the National Competency-Based Model of Technical Education and Professional Training and the Institutional Strategic Plan 2022-2026.

The research refers it exists a perspective of persistent programs and projects of inclusive and quality professional training strengthening, with the goal of boosting their participation and ensure educational continuity on the country's educational subsystems.

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Cultural diversity on the Nicaraguan Caribbean Coast: Challenges and opportunities in education

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Diversidad cultural en la costa caribe de Nicaragua: desafíos y oportunidades en educación

Abstract

The problem addressed in this study is the management of diversity and interculturality in education and its communication effects on the Caribbean Coast of Nicaragua, a multiethnic, multicultural and multilingual region. The objective is to train citizens capable of perceiving, analyzing and interpreting their environments to generate responses to needs and problems. The materials and methods include a critical review of existing literature and the analysis of specific educational experiences, such as the model of the Bluefields Indian & Caribbean University (BICU). The results show that diversity, when properly managed, enriches the educational experience and fosters empathy, tolerance and diversity in the classroom, creating an inclusive, creative and proactive environment. The discussion highlights those challenges such as language barriers, stereotypes and prejudices, when handled positively, can become opportunities to improve educational communication. Educators, properly trained, play a crucial role in this process, promoting effective intercultural communication. This study underlines the importance of an inclusive education that values cultural and ethnic wealth, especially in regions such as the Caribbean Coast of Nicaragua.

Keywords: social cohesion, creativity, cultural diversity, empathy, inclusion.

Resumen

El problema abordado en este estudio es la gestión de la diversidad e interculturalidad en la educación universitaria y sus efectos comunicacionales en la costa caribe de Nicaragua, una región multiétnica, multicultural y plurilingüe. Los materiales y métodos incluyen una revisión crítica de la literatura existente y el análisis de experiencias educativas concretas, en este caso, el modelo de la Bluefields Indian & Caribbean University (BICU). Los resultados muestran que la diversidad, cuando se gestiona adecuadamente, enriquece la experiencia educativa; asimismo, fomenta la empatía y tolerancia en el aula, creando un ambiente inclusivo, creativo y proactivo. La discusión resalta que los desafíos como las barreras lingüísticas, estereotipos y prejuicios, cuando se manejan de manera positiva, pueden convertirse en oportunidades para mejorar la comunicación educativa. Los educadores, debidamente formados, juegan un rol crucial en este proceso, promoviendo una comunicación intercultural efectiva. Este estudio subraya la importancia de una educación inclusiva que valore la riqueza cultural y étnica, especialmente en regiones como la costa caribe de Nicaragua.

Palabras clave: cohesión social, creatividad, diversidad cultural, empatía, inclusión.

Introduction

In the contemporary global context, education faces the challenge of managing and take advantage of student diversity as a source of educational enrichment. This diversity comprehends cultural, ethnic, linguistic, religious, socioeconomic and gender differences, which not only elevate the educational environment, but also are major opportunities to improve quality learning. Nicaragua, particularly the Caribbean Coast, offers a unique stage where diversity not only depicts a challenge, but also a source of educational innovation.

As per Pérez-Gonzáles & Torres-Guzmán (2020), diversity in classrooms is a complex phenomenon, requiring inclusive and sensible strategies for students' cultural and contextual nuances. The Political Constitution of the Republic of Nicaragua stresses the value of an education to promote merging national values and history and local culture knowledge (Political Constitution of the Republic of Nicaragua, 1987). This legal basis affirms the need for an inclusive education which reflects and respects the country's culture and ethnicity.

The Caribbean Coast of Nicaragua is a region characterized by a substantial cultural diversity with indigenous and afro-descendant communities who possess their own languages, traditions and worldviews (Wallace Morales, 2022). This

region is a particular challenge for the Nicaraguan education system. Equally, this diversity offers a unique opportunity to develop educational practices to not only recognize, but also value and enhance cultural differences (Cassells, 2017).

This work aims to delve into student diversity in the Caribbean Coast of Nicaragua and its impact in the classroom's intercultural communication; for this, specific challenges of cultural and ethnic diversity are identified and analyzed. Hence, direct strategies will be carried out to improve the communicative act in the Caribbean Coast educational environment. Merging goals will allow us to demonstrate how diversity can be exploited to enrich the learning process and promote a more inclusive and equitable education.

The value of this study is in its potential to transform the way education is addressed in culturally diverse regions. By understanding and valuing the cultural and ethnic diversity in the classroom, not only does the quality of education improve, but inclusive and equitable education is also promoted. This is relevant for the historically marginated communities. In this context, the educational system faces significant challenges to address in an adequate manner the needs of a diverse population (National Council of Universities, 2022).

The contribution of this study is focused in providing a critical review of the existent literature and in offering practical examples of how the strategies of intercultural communication could be implemented effectively in classrooms, to teachers and policymakers, concrete tools to improve the educational communication in multicultural contexts.

According to Leiva Olivencia & Márquez Pérez (2012), intercultural communication is grounded in sincere and intentional purpose of promoting the dialogue between people from different cultural groups, as constituted in a new space of social interactions (p. 73). The objective of this communication is the interaction between culturally different individuals.

In brief, this work aspires to delve deeper into the comprehension of the student diversity as a valuable resource for the educational development in the Nicaraguan Caribbean Coast, with the aim of proposing concrete strategies to optimize the communication and learning on intercultural contexts.

Diversity in the Caribbean Coast

Diversity is a valuable resource and a powerful tool for the construction of inclusive and equitable societies. In the Nicaraguan Caribbean Coast, the individual and group differences must be recognized, valued, and respected to promote a truly intercultural education. Cassells Martínez (2019) highlights that the inclusion involves guaranteeing that all people, independent from their differences, are accepted and respected in equal conditions. This goes beyond simple tolerance; it is about creating environments where all people can fully participate, contribute and have the same opportunities without discrimination or exclusion. In this context, the Bluefields Indian & Caribbean University (BICU) has developed an educational and organizational model that integrates the communitarian and intercultural perspectives, recognizing and valuing the cultural diversity of their students and communities, with the objective of facilitating inclusion and equity in education.

In this regard, it is crucial to reflect about diversity related with the indigenous villages of the Nicaraguan Caribbean Coast, those descendants of the population who lived in the country in the times of the conquest, colonization or establishment of current borders, and that have preserved their social, economic, cultural and political institution (Merminskaya, 2011). That is how the situation becomes complex when it is about populations with a rich cultural, organizational and political richness, which reflects unique worldviews, stories, and linguistic forms.

Diversity is a complex concept that requires to an analysis and detailed interpretation, specialization in the educational context of the Nicaraguan Caribbean Coast. This region is characterised for its rich variability and wealthy cultural, ethnic, racial, of gender, religion, capacities, among other things. According to Cassells Martínez (2019), the diversity in this area is presented in multiple forms, reflecting the complexity and richness of their social composition. Diversity is inherent to human nature and is present in all corners of the country, and the Caribbean Coast is not an exception.

Interculturality in education

The interculturality is vital, mainly in the Caribbean zone of Nicaragua, since in this process, communities interrelate and interact. There can't be interculturality without dialogue, exchange and understanding of what we are, each one in our own cultural and historical context. Vargas Hernández (2008) arises that we find ourselves immersed in a truly multicultural, intercultural and interdependent world, which present the

challenge of how to comprehend and interact with each other, this diversity presenting a series of important and potentially decisive topics (p. 3).

As stated by Vargas Hernández (2008), majority of the countries are culturally diverse, with more than 600 groups of living languages and 5,000 ethnic groups in 184 independent states around the world. In this sense, it is crucial that educators adopt an intercultural approach, promoting empathy, tolerance, and diversity to create an inclusive and comprehensive environment.

Challenges of the intercultural education

In the current society, it persists challenges derived from discrimination, racism, xenophobia, homophobia, sexism, and other types of discrimination, that limit the holistic development of people and communities. Pellicer (2008) argues that a culturally diverse society submits to deep changes to the interpersonal behaviour and the strategies of teaching and learning (p. 1). In the context of the Nicaraguan Caribbean Coast, these changes are evident and highlight the importance of conceiving student diversity as an opportunity of learning and not as an obstacle.

The challenges in educational spaces of the Nicaraguan Caribbean Coast involve the approach of a series of vital elements that influence in the daily life of these environments. The region, characterized by its cultural richness and diversity, faces specific challenges that must be comprehended and addressed from an intercultural perspective.

The language

One of the most important challenges in the communication inside a diverse educational environment is the language. Students can have different proficiency levels of the language used in school, which can hamper the comprehension and participation in class (Moraga López et al. 2022). Some students speak a different language at home and confront the cultural and linguistic barriers when interacting in school. This can lead to a lack of participation and, therefore, comprehension, which affects negatively the educational process and entails the marginalisation of some students. Therefore, it is fundamental for educators to develop teaching strategies that recognize and value the linguistic diversity to promote an inclusive and equitable environment.

Intercultural communication in the classroom can boost empathy, tolerance in front of diversity, contributing to an inclusive and enriching environment. Stereotypes and prejudices are important challenges in communication, since they can generate negative perceptions towards others, based in cultural, racial or gender differences, affecting interpersonal relations and the classroom dynamic. Educators must promote constantly a respectful and free of prejudices communication among their students.

Intercultural comprehension

Another significant challenge in communication is intercultural comprehension. Student diversity brings along a variety of values, beliefs and cultural practices. Students have different perspectives and life experiences, which can generate misunderstandings and conflicts in communication. Educators must be aware of these cultural differences to create an inclusive environment that promotes the comprehension and acceptance of cultural diversity. Rodríguez-Gómez et al. (2020) point at the importance of implementing learning strategies both formal and informal to facilitate the integration and harmonious coexistence between students of diverse cultures.

Student diversity

In the educational spaces of the Nicaraguan Caribbean Coast, student diversity is a palpable reality with students and educators exposed to different cultures, languages, and worldviews. This diversity, although challenging, must be seen as an essential opportunity to enrich the educational experience and prepare the youth for a globalized and diverse world. Barrios Hernández et al. (2017) highlight that knowledge management and capacity of innovation are crucial to approach these challenges and transform diversity in an educational advantage.

Diversity and its contextual complexities should not generate situations of discrimination, exclusion or conflicts that limit human rights and ancestry of people. Rather, should assume as generator of opportunities in the processes of communication and exchange. In the educational context of the Nicaraguan Caribbean Coast, it is crucial to recognize that the cultural and linguistic origins of students can contribute different ideas and approaches to projects and homework in the classroom, stimulating creativity and innovation. Cultural and linguistic diversity, when it is well managed, enriches the educational process and promotes an environment of collaboration and mutual respect.

Stereotypes and prejudices

Stereotypes and prejudices represent a significant challenge, since students can have negative perceptions towards their peers, due to cultural, racial or gender differences, which affects interpersonal relations and communication in the classroom. Educators, aware of this reality, must promote constantly the respectful and free of prejudices communication between students. When prejudices are not addressed in an appropriate manner, they generate conflicts that prevent the acceptance and recognition of diversity, truncating the interactions and dialogue.

Opportunities in intercultural education

To address and take advantage of student diversity in the current education is fundamental that educators adopt strategies of inclusive learning. According to Stefoni et al. (2016), intercultural education must not only focus on the transmission of knowledge, but also in the creation of spaces where students' cultural and linguistic is valued and respected.

The cultural and linguistic origins of students in this region can contribute different ideas and approaches to projects and homework in the classroom, stimulating creativity and innovation. These students can learn to work together to find solutions to the challenges that are presented to them, taking advantage of their diverse perspective. The adoption of effective communication techniques on the part of educators is crucial to address the challenges and make use of the opportunities that student diversity offers.

The transformational role of educators

Educators must promote inclusive environments from the classrooms. It is necessary a deep understanding of diversity, integrating ethnicity and the different cultures inside any geographical space. It is impossible to promote diversity, empathy and mutual respect without processes of dialogues, without understanding the other; only the well guided dialogue will allow to comprehend that the differences between people, collectives, communities and ethnics are source of strength and cultural richness.

The role of educators implies a program of integral and evolutionary training, that goes beyond the disintegrated specialities of sociocultural and historical contexts, harmonizing the human-academic objectives in a holistic manner to generate constant evolution (Mendoza & Flores-Pacheco, 2021). This learning is complex, and our educational system requires to be completely prepared. For this purpose, it is imperative to advance in the subject of raising awareness and intercultural preparation.

Therefore, the training of teachers must go beyond the disintegrated specialities of the sociocultural and historical contexts (Flores-Pacheco & Mendoza, 2021). It is necessary a program of integral and evolutionary training that harmonizes all the human-academic objectives in a holistic manner, generating not only growth, but a constant evolution. Pérez Rivera (2007), Serrato & Rueda Beltrán (2010) highlight the need of evaluating and improving continuously teaching to adapt to the changing needs of students in an intercultural context.

Proposal of improvement against the challenges of education in the Nicaraguan Caribbean Coast

In the Nicaraguan Caribbean Coast, the implementation of strategic dynamics and pertinent is crucial to address the educational needs of a diverse and multicultural population. Educators must adopt strategies that adjust themselves to the specific realities of learners, considering their cultural, linguistic and social contexts.

This holistic approach is essential to encourage a harmonic education from an intercultural perspective. In this context, the use of strategies and pedagogical tools becomes fundamental to strengthen the educational processes, promoting a meaningful learning in which the student is the protagonist of their own educational development.

Exchange of intercultural experiences

A concrete example of this dynamic is the exchange of intercultural experiences between learners in an environment of healthy coexistence, mutual help, respect and companionship, as it has been observed in the experiences of the BICU's educational model. This exchange, that is done both in the mother language as in Spanish, allows students to share and value their cultural experiences, promoting a deeper comprehension of diversity. According to Wallace Morales (2022), this educational model has demonstrated that effective and assertive intercultural communication to reduce the gap between the individual diversities which emerge in learning spaces.

Cultural diversity in the Nicaraguan Caribbean Coast not only presents challenges, but also valuable opportunities we have not yet been able to see in a fair and appropriate manner. The educational systems, structured for the achievement of goals and objectives, use diverse strategies, methods and techniques that are implemented in different levels and educational stages. These strategies look for, not only the transmission of knowledge, but also the inclusion and respect of cultural diversity. Among the used strategies, we can find legends of historically relevant villages, illustrations, investigations about the history of indigenous people and the use of phrases in languages such as Miskito, English and Mayagna.

Practical examples in the classroom

Let's consider two examples in a classroom that illustrate how cultural diversity can be managed in an effective manner:

Example 1: A student comes from a different culture from the others. The teacher makes their presence notorious, turning them in a key performer in the educational process. The student exposes their customs, beliefs and how they live in their community. This exchange contributes to their peers' understanding of diversity, allowing to become aware of a determined way of being, a culture and history. This process gradually generates the inclusion and participation of everyone.

Example 2: A student communicates themselves in their mother tongue, while their peers are proficient in the language classes are taught. Diverse strategies can be applied to achieve a full inclusion of the

student: the classroom learns Keywords and phrases of the student's mother tongue and the teacher oversees ensuring a good communication between everyone.

Conclusions

The study about student diversity and intercultural diversity in the Nicaraguan Caribbean Coast reveals a series of essential conclusions to comprehend and address the challenges and opportunities that are present in this region. Next, the main conclusions are emphasised:

Cultural, ethnic, and linguistic diversity of the Nicaraguan Caribbean Coast is a valuable resource that must be recognized and valued. This recognition is essential to promote an inclusive education to respect and celebrate the cultural and ethnic differences of students.

Intercultural education stands out as a crucial approach to promote inclusion, respect and comprehension of the cultural diversity. This approach allows to transform challenges in opportunities for personal and collective growth, facilitating the creation of enriching and comprehensive educational environments.

It is fundamental to implement pedagogical strategies that are adjusted to the cultural, linguistic and social realities of students. Strategies such as the exchange of intercultural experiences and use of mother tongues in the classroom are examples of effective practices to promote inclusion and cultural comprehension.

The linguistic and cultural diversity of the significant challenges in the educational communication. It is necessary to develop teaching strategies that recognize and value this diversity to promote in an inclusive and equitable environment. Educators must be aware of the cultural and linguistic differences to facilitate an effective and assertive in the classroom.

The adoption of an intercultural approach in education has a wide potential impact, improvement of student participation, academic performance and reduces the derivative conflicts of cultural misunderstandings. In addition, this can be used as a model for other regions with similar characteristics, in Nicaragua as in other countries with multicultural contexts.

It is crucial to transform the perception of student diversity, conceiving it not as an obstacle of learning and growth. This transformation is essential to create more authentic, human and worthy society, with the aim that each individual to be valued and respected for their unique characteristics.

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interviews

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"When we talk about quality as a human right, we talk about an inclusive, equitable, participative education in the context of community"

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Education in Nicaragua is a constitutional right and a revolutionary principle for the elimination of poverty and empiricism. The country's public policies led by the Government of Reconciliation and National Unity (Gobierno de Reconciliación y Unidad Nacional, GRUN) establish education is free in all levels and aims for the holistic learning of all Nicaraguans, fostering values and principles including peace, social justice and sovereignty, enabling the protagonists' quality in intellectual, scientific, and humanistic evolution.

Quality in education is a transversal process targeting at the formation and growth of essential learning for kids, youth and adults to successfully address life's challenges, while protagonists aid the country and community's progress. Hence, educational subsystems: Ministry of Education (Ministerio de Educación, MINED), National Technical and Technological Institute (Instituto Nacional Técnico y Tecnológico, INATEC), Regional Autonomic Education Subsystem (Subsistema Educativo Autonómico Regional, SEAR) and National Council of Universities (Consejo Nacional de Universidades, CNU) cooperate to reinforce citizen skills, integrating research, innovation and development of educational projects applying a model centered on people, families and communities.

On Índice, Education Journal of Nicaragua sixth edition, we chat with Dr. Maribel Duriez González, president of the National Council of Evaluation

and Accreditation (Consejo Nacional de Evaluación y Acreditación, CNEA), sharing with us about quality in education on the National Educational System.

Laleska Gutiérrez (L.G.): Good afternoon, doctor. **How are you?**

Maribel Duriez (M.D.): Good day. Thank you so much for the invitation, sharing about quality control in the National Educational System, relevant and crucial in the educational revolution's present context.

L.G.: How is quality incorporated in the national legal system: Political Constitution; **General Law of Education and National Plan to Fight Poverty and for Human Development?**

M.D.: In our country's Political Constitution, on chapter *Education and Culture*, it establishes education is an invariant State function, with the objective the of full and integral education of all Nicaraguans, grow their personality, and nobility of spirit to assume country's tasks. Similarly, Constitution outlines education as a unique, democratic, and participative process merging theory with practice. It promotes protagonists' participation: family, community, and people in the educational process. On this Revolution's second stage, we celebrate having free technical and higher

education, as restoration of the quality in education right. Thus, when we talk about quality as a human right, we refer to an inclusive, equitable, participative education in the Nicaraguan community and society context.

Within the framework of laws, quality is retrieved in Law N° 582, General Law of Education, defined as: transversal criteria of Nicaraguan education related to academic results and relevance to students' life learning. Also, it is established quality in education aims for the construction and development of relevant learning to enable students to successfully face life's challenges and each one becomes a positive subject-actor for the community and country. Responsibilities are established for each subsystem, Ministry of Education, National Technical Institute, Regional Autonomous Education Subsystem, and National Council of Universities.

In this same law, article 116 states the National Evaluation and Accreditation Council's creation (MINED, INATEC, and CNU), forms this organ to ensure quality in the educational system. It is new, a start-up, as result of the second stage of the Revolution and, thus, we believe the General Law of Education articulates quality in the National Educational System.

Regarding the National Plan to Fight Poverty and Promote Human Development (2022 – 2026), quality in education is clearly stated in the guidelines:

→ More inclusive, equitable, and quality education in early childhood, and presenting options for baccalaureates to get a medium technical title or similar upon graduation.

→ Enhancing technical and technological education, prioritizing technologies and production.

→ Growth of human talents for national development with more higher education.

Therefore, the National Plan to Fight Poverty and Promote Human Development and our country's educational laws have at their core quality in education at all levels, task we are assume and accomplish from different state organisms.

L.G.: What are the strategies or mechanisms implemented to secure quality in education in basic, technical, professional, and regional autonomous education?

M.D.: In the National Plan to Fight Poverty and Promote Human Development 2022 – 2026 is established a revolutionary model to flourish human talents and enable participation to protagonists: person, family, and communities. Thus, when talking about our educational model focused on the person, we refer to an education based on learning, in the human being; an integral education on various educational levels, contributing to the development of a society in revolution with shared principles like peace, equity, inclusion, and insertion of the protagonist to the country's economic progress.

Considering the stated on the National Plan to Fight Poverty and Promote Human Development guidelines as specific educational policies, the National Council of Universities has created actions for the construction of a Higher Education Strategic Framework 2022 – 2030, a regulatory compendium establishing the actions to be achieved by all higher education; in its role, the National Evaluation and Accreditation Council has executed assessment and accreditation processes at university institutions and evaluation mechanisms at university degrees. MINED and INATEC have built their quality control strategies in the National Education Commission's work framework, which worked aspects related to curricular transformation and the Learning Evaluation System; everything on track of quality in education on all educational subsystems. In education, these policies allow us to have more protagonists on classrooms, so no one remains without studies, and we can push society to grow the revolution and meet all goals, such as free education, solid economy, creative and innovative economy we boost as Government, as State for our people to go beyond.

L.G.: What are the educational community's benefits by setting and promoting quality control?

M.D.: All the National Education System has worked on the change. We are moving from a model focused on teaching, to one focused on learning. This means, before we engaged on qualifications, in quantitative scores, how many approved and disapproved. Today, with this new educational model, we talk about how much is learned, how is learned, and which competency we develop on different education and training programs on various levels. The person is the centre of learning, their family and community.

We are working on a model to flourish competencies, a curriculum allowing to take youth to the job market quickly and have continuity. We are also working in competencies to promote research and

learning in more demanding spaces. All this is quality, therefore, by teaching professionals, each time more competent, to answer the community and the country's development. Hence, we are securing quality of life and families' wellbeing. The restitution of the right to education is an important factor for people's wellbeing. Here I highlight the access to free education, special programs such as the school snack, scholarships for young university students, better infrastructure, creation of universities in the Caribbean Coast. Even in this second stage of the Revolution, we see how our Government watches over education, declaring free universities with quality so nobody remains without studying.

Similarly, we can't stop mentioning emblematic programs like countryside high school, technical education in the countryside, trade schools, and Countryside University (Universidad en el Campo, UNICAM); spaces enabling protagonists to stay in their communities, and surroundings, get higher education closer to great majorities unable to access it before. We must keep boosting all programs, expanding the registrations. They have been successful programs because education is now in difficult access zones. We also see an educational revolution to guarantee quality for people and communities; we see inclusion, equity, social justice, restitution of a right we didn't have with neoliberal governments.

L.G.: From which perspective does quality control in all levels of education ranks the National Education System as a referent nationally and internationally?

M.D.: To be referents nationally and internationally, we must go back to laws and their reforms applied in this second stage of Revolution, specifically law N°582, General Law of Education; law N°704, Law creating the National System for the Assurance of Quality and regulator of the National Council of Evaluation and Accreditation; and law N° 1176, Law of reform and addition to law N° 89, Law of Autonomy of Higher Education Institutions. All these laws and reforms are guided to the reinforcement of quality control in education in all subsystems.

The National Plan to Fight Poverty and Promote Human Development is a national and international referent as its guidelines and strategies are tied to the integral development of the family, community, and people. A new experience in Latin American and the world.

Educational subsystems (MINED, INATEC, SEAR, and CNU) are in a historical moment of changes. We are working with quality standards, universal access to education differently, going to families and communities. Regarding higher education, we have a Strategic Framework and a National Plan of Education which addresses the National Plan to Fight Poverty and for Human Development, advances we have achieved in this second stage of the revolution guarantee protagonists' quality education.

We are working in the alignment of higher education with MINED and INATEC to have

quality standards on different levels and achieve all education stages. For instance, when a boy or girl joins initial education, their competencies must be consistent with elementary, secondary, technical, and university education to achieve continuity in the education process. Of course, this continuity isn't easily achieved in other countries, which is why Nicaragua has had national and international involvement. Let's not omit Nicaragua has been an example for the international community since the 80's with the National Literacy Crusade, one of the first educational revolutions we have in the country. The National Literacy Crusade has placed Nicaragua on internationally as a country where education is an unwaivable right. It's important to mention that, with the neoliberal governments, education was privatized; access, and equity of opportunities we, Nicaraguans, enjoy nowadays are thanks to the Revolution and our Government of Reconciliation and National Unity.

In this second stage of the revolution, we have restored education's right by going back to gratuity, having access to education in the countryside, we have online programs for all levels. Therefore, we have various educational modalities enabling free access to education for children, youth, and adults, as our main principle is eradicating poverty. Then, the acknowledgment we have internationally, in Central America we are the second country to strongly push the topic of accreditation on higher education and we are the first one to perform quality accreditation on higher education institutions.

In 2024, the CNEA will start the accreditation of medicine and law degrees. We closed this 2023 with the accreditation of minimum quality established in the law, so we are working hard in the accreditation and quality assurance on higher education. These processes of quality control are done by MINED and INATEC on different levels, allowing us to position ourselves as a country worried about their people, a country ensuing quality from the practice, actions, and makes us stand out from others and, of course, to be recognized and admired internationally.

L.G.: We see the educational subsystems work closely together for the evolutionary transformation and full human development of protagonists; one of those great advances has been the digitization. How can we ensure quality in education on this modality?

M.D.: This is a great topic. I remember when I was a student at the Preparatory Faculty in the 80's, e-learning was promoted on the first stage of revolution. I remember teachers from the UNAN-Managua travelled to the Caribbean Coast through the program PRUEDIS (Proyecto a Educación a Distancia, Project of E-Learning). In it, teachers left printed materials, question guides, and came back once a month or every two months to evaluate. That was the e-learning I knew, even when I completed my master's degree, that's how it was. Digitalization comes and bursts in years later with the Internet, and the second and third generation with the introduction to www and since then information becomes public domain.

Nicaragua comes evolving from a very long time ago in some public institutions, as it is the case of the UNAN-Managua, UNAN-León. Now we have a guide

on E-Learning, degree of educational informatics, specialists in educational informatics. I remember the first specialty we had on 1996 with UNESCO (United Nations Educational, Scientific and Cultural Organization). Subsequently, the movement of educational informatics came, the degree was created at UNAN-Managua and after the Direction of Virtual Education began to be created, reaching the digitalization. I believe COVID-19 pandemic came to teach this part of the hybrid model; how physical attendance also works with it. Nowadays we face the phenomena of digitalization, and it must also be planned, organized and evaluated. Personally, I am convinced this modality helps many people who can't access in-person modality, but asynchronous, as it is called, so they can take a Saturday answering a forum, working or reading and turning in a task next weekend with the time each one has.

This modality is based on the independent students' work. Therefore, when we have a pedagogical mediation in a virtual classroom with qualified professors and, above all, if we have technological resources, we can take advantage to have higher numbers of students in the technical degrees, university degrees or specialties. An example of the progress we have in Nicaragua is having the first University Online (Universidad Abierta en Línea de Nicaragua, UALN), a space we must keep enhancing from the collaborative work. This program is a great example of access and gratuity in education. UALN has already transcended because it serves a population who wants to continue their studies, aspires to keep on preparing themselves from where they are, be it national or international, giving

access and coverage to people because it has a wide range of careers.

All modalities are essential: on-site, hybrid or blended modality, and virtual. Therefore, between the CNU and CNEA, we evaluate virtual programs because it is not the same assessment program applied in on-site modality and virtual. This modality is already offered in all National Educational System from INATEC to MINED and is one of the guidelines of the National Plan of Fight Poverty and for Human Development.

L.G.: Which were the obstacles and challenges on the second stage of the revolution for quality control?

M.D.: Challenges are a lot, obstacles too. The most important part of quality is the curriculum, heart of the educational systems. The biggest obstacle is to have curriculum quality, as well as teacher quality. Teachers must make a transformation. Addtional to generational change, us teachers must update ourselves every day. Institutions must also offer education options on new technologies of information and communication. For example, in the 80's I was a student assistant and started to give classes in the 90's, when chalk and blackboard were used. Now, teachers have to make more interactive and practical classes because we have IT tools, we also have virtual

classes in hybrid modality, so teachers must specialize to virtual learning environments, pedagogical models, pedagogical mediation to achieve quality education and facilitate learning, evolutionary transformation, of our educational model.

Another challenge I believe is very important are student protagonists, the ones who have to learn strategies, enabling them to have a meaningful learning, one built every day, not memorized. We must eradicate memorization; learning are all those topics of interest which motivate us, excite us, and makes us grow every day. Learning is not just academic, is emotional, social, knowledge, abilities and all of them transcend motivation. If I am motivated as a person, with family, and community for the wellbeing and quality of life. Teachers must contribute to integral learning, but for teachers to do it, they have to learn how to make evolutionary transformation and we are working on it in teacher training.

The other obstacle has to do with quality related to the capacity of starting investigations and innovating from preschool levels where inquiry is promoted through games. Then, when we have boys and girls working on a pedagogical inquiry model, we can develop a higher number of investigations, higher number innovation to allow social and economic growth of the country and, in this sense, it is also a challenge of quality promoting more each day the investigations, innovations and publications in all areas of knowledge. It is an agenda topic we are working at the different educational subsystems.

There are more challenges for quality at institutional management of schools, universities, everything has to do with institutional administration, administration of human resources. All are relevant topics, but, to me, we must focus or prioritize the curriculum; it is the heart of the school and, together with revolutionary values, promotes the quality of life on the person, family, community; a model focused on the creation of learning, on protagonists' learning needs.

L.G.: To finish, would you like to share some other information?

M.D.: Quality control is very important because it allows education to continue being inclusive, equitable, and engaging; it allows us to be better every day. Quality is an attitude, not only a compromise, but an attitude, while being a militant each teacher's compromise. We can't talk about a model focused on the person, family, a revolutionary model, if we do not compromise with quality.

We are all compromised with quality; thus, I talk about a militant attitude. Quality is made day by day, built day by day and every day we have to be better because it is not achieved completely, we must keep working to reach that quality to enable education to be the core of our country's students and protagonists. Education is the core of our country's youth and protagonists. Therefore, it is something we must take care of, of its quality, and is a priority for this country. We must keep working all educational subsystems and we must leave a legacy for revolution to continue, for the model to be maintained; we must work hard, and we must keep going beyond for more educational victories.

L.G.: We are thankful for sharing with *Índice, Education Journal Nicaragua* about the tasks and vision of the quality national system in education in all levels, as an essential basis for the enhancement of our educational model focused on the person, family, and community.

M.D.: Thank you all for this opportunity.

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> "School is truly important, but it's not the only source of learning. The coexistence from the community is a major source for a quality education."

Herman Van de Velde, PhD

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Quality in education is a matter of great relevance and social interest. Elements such as Genuine Cooperation and inclusion are referents on the development of quality education, as they contribute to the transformation of a social environment of people who act and interact on the educational field.

On the sixth edition of *Índice, Education Journal of Nicaragua* with Education of quality: equity, inclusion and social justice as transformational principles as main theme. We present the reader an interview directed by Elmys Escribano Hervis, from Revista Atenas and Colectivo Editorial de la Revista Iberoamericana en Investigación Educativa, to Herman Van de Velde. It is an open and lively exchange between both sides who merge reflections of new messages to interpret education with an evolutionary gaze.

During the interview, Escribano and Van de Velde engage about quality in education successes; it entails meaningful learning for life through the knowledge building, as well as community's inclusion on educational processes through the sociocultural elements that facilitate wisdom from a holistic perspective.

Dr. Elmys Escribano Hervis (E.E.): The Editorial Collective of the Colectivo Editorial from Revista Atenas and Colectivo Editorial de la Revista Iberoamericana en Investigación Educativa have the pleasure of talking with Herman Van de Velde,

general coordinator of ÁBACOenRed. We regard it as such, a digital creative space of Alternative Education: Cooperative Learning without borders. Our editorial collective appreciates this opportunity.

Herman, your original and articulated foundations and positions on various topics of education and science are quite recognized, so we suggest talking about them. The first subject would be recognizing ourselves as a legitimate stance, to defend genuine cooperation, your concept, for promoting learning processes to include research education. **What value do you ascribe to conceive these processes currently moderated by Genuine Cooperation?**

Dr. Herman Van de Velde (H.V.): Thank you so much, Elmys, for this space and opportunity of sharing with you from that dear country, Cuba, that I carry, for your government and people, something special on the left side of my heart. I truly like it; I'm very happy.

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Speaking of genuine cooperation, firstly, I have to say the concept of Genuine Cooperation was found on a Commander Fidel Castro's speech where he discusses Genuine Cooperation, referring to international cooperation. It was during the II CARICOM-Cuba in Barbados, on December 8th of 2005. Thus, finding ourselves with

the concept of Genuine Cooperation, we were truly impressed because it aligned with the context of my Ph.D. thesis. It had a lot to do with the evaluation of international cooperation regarding education in Central America. We really found a large part of what is named cooperation, also internationally, is not always genuine. Further on we applied the concept of Genuine Cooperation on an international, national and local level, specifically in education and integral education, trying to give meaning to this concept. Then we found various aspects.

A core value in genuine cooperation is inclusion, which is an ethical, pedagogical, and methodological referent. In traditional education we love to talk about "teach to". It is claimed we must teach the young, grow conscience about care for the environment, namely. However, when we say, "teach to", we always refer to others. This is where the matter of inclusion is placed or, rather, exclusion. Of course, we allude all people must be active members of the educational process, socio-educational, politic, and ideological life in a country, a society. Yet, when I say it should "teach to" or raise awareness to mothers and fathers of family to..., I make an implicit exclusion of myself, as if saying: "we should teach other people, but I'm already educated". This drew our attention to the point we thought of creating a dictionary of "bad words" in pedagogy, such as "teach to" as it excludes myself. Hence, since then we started to talk about "educate US".

Also, we started to consider this approach of Genuine Cooperation in classroom on all levels, seeking to build this horizontal relationship implying Genuine Cooperation as a learning environment. Similarly, I say I know and the other doesn't, whereas,

currently, with such access to data sources, internet, through books, libraries, other people, it is not true I know and the other does not. Rather, from the Genuine Cooperation approach, it is truly important, instead of always trying to teach with the claimed "wise man", we must provide learning spaces where we all learn. Including me as a mediator, as a teacher! I also have to learn from my students! This is a key element. Instead of just raising awareness, we talk about becoming aware ourselves, to build our own conscience together with everyone else because I will never get to an already finalized consciousness.

It is a great challenge to keep building conscience all life-long. We learn throughout life, up until —I would say— death do us apart from learning. So, I completely agree with your approach that Genuine Cooperation is an authentic posture to promote learning processes, and, if you allow me, I could share some personal experiences we've had. First, personally as an education and teaching professional, when I came to Nicaragua, 39 years ago, I felt happy when I had a textbook available where I could ground myself to work with students. I remember it was a Cuban textbook translated from Russian: "The pedagogy" from Savin, in pedagogy, and I had a psychology one. Subsequently, we grew interested in producing a textbook of our own authorship and we made it in different

fields: scientific research, general pedagogy, educational assessment, etcetera. However, further on, about ten, fifteen years, I asked myself the question and, already thinking from this approach of Genuine Cooperation, what is the function of a textbook, for instance, in higher education? Is it not, implicitly, I'm telling my students: 'What you must learn is in this text'? Rather, unconsciously, I could be limiting them to find data, deepening elements part of the study program and go beyond what it is said in the book. As you know, every book is limited. In a book we cannot lay everything. So, I started to work with the approach of Genuine Cooperation, another strategy aiming to learn through all of us researching, learning by sharing, learning meaning from a critical attitude facing the data we can find on internet, for example, where there is so much trash. We could name this as "knowing how to read", and when I say knowing how to read, I remember José Martí's words: "Knowing how to read is knowing how to walk, knowing how to read is knowing how to ascend".

This exact thing is something I wanted to directly apply in the educational experience, understanding José Martí, as knowing how to read and how to walk means we could learn to be superb actors or protagonists in our society, where we are born; but it is not enough, since knowing how to write is knowing how to create, is transforming from an actor to an author; the actor with "c" we change it to "th". Then, instead of actors we become authors of new sceneries according to the political, ideological, pedagogical project we share nationally, on society level. Everything means we must also learn to write, knowing how to write.

I had an experience in a module in educational planning on a master's level at Autonomous National University of Nicaragua, Managua

(UNAN-Managua), Estelí. In educational planning, the whole world has experience when they are on a master. We worked at the beginning without a textbook and even promoted research, first based on identifying possible sources about educational planning. With students, we went to review documents and books' index, so in nine meetings we learned new topics of educational planning. Then, we created a new index, which we organized ourselves formed in teams of two to three people, assuming the responsibility of investigating the topic.

Subsequently, a schedule was defined so each presented a draft of what they had investigated. It was a learning by investigating but presenting collectively so the rest could also suggest. We also had available a physical library of around ten books, including a text that, from the Master's coordination, was created. As I had stated I didn't want to work with only one textbook, I requested authorization to take ten books and photocopy them three times each one (because it was 30 students). So, at the same price, instead of having one textbook, everyone with the 30 copies had ten textbooks, three samples each, as a physical library. Also, we built a digital platform library.

All of this was interesting as we went on building together, being authors of our own learning. After nine meetings, the students made a cover page, and we edited a new book (reflecting everything learned) about educative planning. This book is already at the digital library of ÁBACOenRed, titled "The art of planning". I'm not saying this book is the best, the supreme. No. But it is a product of Genuine Cooperation between 31 people, 30 students, and myself, a team of book's co-authors reflecting on what we learned. I

can also talk about another book we created for a PhD. The title of the book is "Being a teacher: notes about teaching training and evaluation"; similarly, it was carried out on "Learning to investigate, investigating" (video and article), and "Systematization of experiences". This means we apply Genuine Cooperation as didactic, as methodology, not for teaching, but learning.

In this sense, returning to the question of a legitimate stance to promote education processes, I would say it is authentic, original and highly enjoyable, as in those cases it is no longer me who (supposedly) knows it all, but I methodologically accompany the processes. From my experience, I share some comments which, of course, provoke and enable others to reflect; as well as their comments also provoke me and make me reflect on what they say and contribute because what we share is interesting.

E.E.: Quite an interesting philosophy, I would say it is an update of the basic principles that have powered this movement of continental popular education. **Do you consider this could be a bet for quality in education for everyone in our areas, our regions?**

H.V.: I am convinced it is. Even when at the beginning we called it "paradigm", today we talk about Genuine Cooperation with a **Vital Essential Vision**. Genuine Cooperation has been a collaborative construction from the pedagogical experience of each person of this team with practice in education since the National Literacy Crusade in Nicaragua in 1981; assistance in the process of national consultation about goals, objectives, and principles of the New Education in Nicaragua; education for

adults and teacher training, as well as housing cooperatives. Similarly, all our people's inputs are truly major, even in other countries of Ouramerica (Nuestraamérica), especially where they represent us as ÁBACOenRed.

In our case, regarding Genuine Cooperation, we do not pretend to be either a paradigm or model as it is not something to be duplicated, rather it must be built from the territory, from the reality we are a part of. Genuine Cooperation won't necessarily concrete itself as it did here in Estelí, in our activities as ÁBACOenRed, as in the context of Universidad de Matanzas. The embodiment of Genuine Cooperation is different. This is why, instead of talking about a paradigm, we consider it a **Vital Essential Vision,** implying essence for life, for quality life, and not only educationally, but on the level of life in all its areas. For instance, we talk about Genuine Cooperation on communitarian or territorial development, social solidary economy, cooperativism.

Vital essential vision is based specifically on two pedagogies we have named "**Pedagogy of being, being EcoPerSocial**", pedagogy of "**BEING being**" on a people level as well as a community level with an EcoPerSocial identity, and a **Signification Pedagogy**.

We define identity as **EcoPerSocial**, though it is a concept we will not find in any dictionary. It is not someone's invention, it is the collective construction through contributions in workshops we have held with teachers, and it means our identity, both as a community and personally, is a consequence with conjugation, the interaction of three very

important dimensions: a) Very **personal** characteristics; b) **Social** interaction with other people, family and c) Section we call **ecological**, which completes EcoPerSocial, regarding the context, territory, to say: if I didn't decide to come to Nicaragua, instead, for example, went to Brazil or Cuba in 1983, then in this moment, the Herman who would be talking with you would be other, not the same because context influences a lot.

Genuine Cooperation has as a foundation in "**Pedagogy of Being, being EcoPerSonal**". The other foundation is the "**Pedagogy of Meaning**". From a Vital essential vision of Genuine Cooperation, it is very important to be conscious of how everything happening to us in life is what we mean; we mean these events, these experiences. An example: right now, we have this virtual encounter, although it is also in person, right? because here we are. Then, when we leave, when this ends, each of us will build a meaning, perhaps different, of this same event, of the conversation.

All these elements are essential to Genuine Cooperation. We have various referents: an **Ethical EcoSocial._Humanist Referent**, a philosophical, political, and ideological posture and **Pedagogical Referent**, with two elements: a popular alternative education and Integrator of Learning and its Facilitation Paradigm (Paradigma Integrador de Aprendizaje y Facilitación, PIAF). We also have **a Methodological**

Referent, implying an educational practice coherent with the two previous references.

In the Pedagogical referent we refer to a popular alternative education as public education, not as private education and PIAF, where we pick up elements of different learning theories, considering all these theories of learning have crucial elements to consider. Maybe there is not totally "false", or "real" learning theory, rather, just as behaviorism, cognitivism, humanism, constructivism, connectivism, all have interesting elements. Which is why we talk about the learning integrator and its facilitation paradigm.

The **Popular Alternative Education** is an adequate strategy to guarantee quality in education, in learning, at all levels. Here I have our definition of popular alternative education; I will comment briefly. *An alternative popular education, as public education, is the one with original and creative inputs* —originals mean of the origin; where I am from, from there we must begin, so we go training ourselves creatively— *points to the integral and integrating learning of the human being, provoking* —and here once again— *from their own being,* —from what we are— *as a* sociocultural historical product attitude changes.

Also, José Martí highly stressed history is the root of actuality. So, for us to be able to live consciously we must know our history. This means we should provoke changes in attitude, expressing what we learned. One of the things we propose for a quality in education is we cannot settle with changes in behavior or knowledge accumulation or knowledge building, because we can truly only talk about meaningful learning from the moment there are changes in people's attitude, only possible when knowledge building begins from our own context's history we live in that moment. And there we propose *everything is based on Genuine Cooperation and guided towards a social entrepreneurship of quality* since, if there is an attitude change, the question is, what do we do with it? To talk about quality in education, we must be aware of what we do with what we learned. If I don't do something with what I learned, possibly I didn't learn it.

All of these imply two things: one, critical appropriation of the sociocultural heritage of a society, to be able to be an actor with "c", actor in the current sociopolitical and economical coexistence. What José Martí used to say: "knowing how to read is knowing how to swim". In essence, knowing how to read not only literally, but generally knowing how to read your context, understand, comprehend this society where we are born, because it is important to be a conscious actor in this sociopolitical and economic current coexistence. But it is also important there is a creative and constructive contribution of our students, of us as authors, no longer with "c", but with "u" of the culture and society because, if there is no authorship, it means we haven't advanced. Then, the positive development, quality in education, implies all those contributions must be made, not only on a university level, but on technical education or education in general: *creative and constructive contributions as authors of culture and society where the persona unravels itself together with other living beings in all their dimensions.* When I say other living beings, I mean it's not only human beings, but the whole ecological part, earth, universe.

Being able to create, build as authors, from very young, would be so interesting. I remember right now José Martí's words when he said: "*Only cultured people can be truly free people*". So, being cultured means to say no just knowing history. It is important to know history, but also contributes to keep making history as a very important input.

Coming back to your question, I like how you say, "*for our continent*", because we cope too much of other continents, while there is so much richness in Ouramerican we should delve into, so we can also achieve to help to this culture, this society Ouramerican is so different. Decolonization keeps being a constant challenge because they have imposed and kept on imposing ideas, models, dimensions, elements I do not know to what extent they have anything to do with our own history here in Ouramerican.

E.E.: It is very interesting, and I confess I feel amazed, I feel pleasantly impressed, above all by how you have managed and inserted Martí's thoughts in your reflection. In fact, it also presents us with a line, phases. Thus, I believe we must have other conversations in the future to delve further into what has left us delighted.

Martí used to say men have two mothers: nature and circumstances —to think from there the definition you were saying. Martí said "*The past is the root of the present. It must be known what it was, because what it was is what is*". You have used knowing how to read and how to walk, knowing how to read ourselves connects us to the idea and lecture you have done, it connects us to a topic we have thought of proposing for you to talk to us about. Essentially, it has a lot to do with the sense of the critical pedagogy, therefore we wanted to hear you: what meaning do you grant to support the learning processes today, founded on the pedagogy of the renewed popular alternative education and originally contextualized for Ouramerica?

H.V.: To be able to talk to you about **critical pedagogy** it's important to mean the concept, because I am aware there are different meanings of critical pedagogy nowadays. There are meanings saying its origin is further from the north. But more than seeing the meanings from the North, it appears to me so important to mean the concept of critical pedagogy **from our Ouramerican context.** The meaning I give to it has much to do with my answers to the two previous questions. I could also say, picking up a concept from Paulo Freire where he criticizes banking education, critical pedagogy is the one taking us to a **liberating education,** completely opposite education to banking education. Likewise, we could call a community pedagogy, a pedagogy from the community where learning how to read and write is promoted, two things from the territory, from the community, and where school is part of the community. A pedagogy where we are conscious learning to read and learning to write is not only from school. School is truly important, but it's not the only source of learning. The coexistence from the community is a major source for quality education.

Critical pedagogy is something it considers this community character, and for us it is reflected in this **Pedagogy of BE being.** I remember, in some moment, some years ago, UNESCO stated, and imposed internationally, we must: learning to know, learn to do, learning to live together and suddenly it also appeared "learning to be". If we truly had integrated the reflection from a philosophy, or would be critical pedagogy, we would have proposed from the beginning regarding "learning to be" *Would it be this boy, this girl not born yet, it still has to learn to be?* I feel this is rude because this boy, this girl just born already is. The only thing it is not, is an adult person, of course, and has to grow, has to learn, has to educate themselves, but this boy, this girl already is. Then, it is rude to say we must "learn to be". At least we should say "**learn to be being**". Yet, I have never seen, in any place, up until this moment, a writing where the expression "learn to be being" is criticized (perhaps there is, but I have not read it).

Another element I analyze from the approach of critical pedagogy is **competency-based education**. This is something imposed on us by the World Bank in every country. *But have we really analyzed from a critical pedagogy what an education based on competencies means?* Three times it goes towards the product, nothing else. *Would it be the product is the only indicator to talk about quality in education or perhaps the process it takes for the product could be a better indicator to value product quality?* Hence, frequently I give an easy example: in Nicaragua we have an evaluation system of scores—that should not exist—, because scores is a capitalist try which does not help us in anything, rather promotes competing to see who has more; but, let's say two boys or girls achieve 75 in average score. If we analyze two situations:

(1) a kid has always had 95 and up, now has 75; (2) the other kid always had a 62, 63, 65 no more, but now has a 75. Would it be the results are the same 75 and 75? And there is where a supposedly qualitative scale is applied stating in both cases "very good" or "good". However, giving very good to both is a great mistake, a barbarity, since the first boy or girl descended from 95 to 75, we must recognize they have a problem and we must investigate the cause since, suddenly, this academic performance has decreased. It is also a barbarity to qualify the kid who has had their grade go up from 62, 63, and 65 up to 75 as a "very good", because it is excellent. We can't deny the process, tendency, one to the lower and one upper. The one giving us more possibilities of a good future in education is the kid who is growing; but in the two cases we must analyze the causes.

Through the **pedagogy of meaning,** a critical pedagogy could be materialized, since it implies reflection of the educative act. It is important to be conscious I mean something, and the other does too. This provokes me a critical attitude because when we share the diverse meaning of the same educational event, it makes me think, makes me critically reflect. Here I would say, as a critic of what we have in our universities in general. No, not generally, I can't generalize, even when I have the context of the UNAN-Managua and other universities' contexts where I have punctually gone to share. I've been lucky to go through various universities in Latin America and have perceived, even now, our universities work a lot under the colonized conception, where many want to copy what is in Europe, United States, instead of building what is ours and not letting us be imposed of.

When we talk about a popular education —now we say **Popular Alternative Education**—, we don't say popular alternative education, as we said at the beginning, because after we saw in popular education there are no different alternatives, rather the alternative education must be popular because there are also non-popular alternative educations, elitist and is not what we pretend. Which is why we say **Popular Alternative Education as Public Education.**

The other day I had a conversation and suddenly they asked me: *your idea of Genuine Cooperation, is it based on the contribution of a pedagogue?* And they mention us names of pedagogues with some history from Europe or United States. But here we have, for example, Simón Rodríguez, Paulo Freire, José Carlos Mariátegui, Orlando Fals Borda, the own José Martí and others. There are many sources here we should delve into to identify their contributions because they come from our own realities. I mean, we must expand, broadening more in these contributions from our contexts as a challenge to build this matrix of an Ouramerica education.

I am self-critical and I recognize the proposal of Genuine Cooperation. We have made a few first steps to face this collectively built vision from the Nicaraguan, Central American and Cuban context, through the experience of my doctoral education, and the support of other Latin America countries.

How can we further enrich this? With studies of ancestral knowledge of our indigenous people, where there are many examples of Genuine Cooperation, even if it was not named like this, because it is not a model, it's not something closed,

is something we keep on building. If you read an ÁBACOenRed's paper from a few years ago, you will see the scheme we had of Genuine Cooperation is different to the one we have now, because it is something dynamic and to keep on building, enriching.

Critical pedagogy is a pedagogy integrating **subjectivity** to educational activities for it to be of quality. When I started to work in Nicaragua, and Belgium too, it was stated to make an investigation, the scientific method had to be applied. I say now: it is fine, but I would rather talk of a **scientific methodology.** Within this range of methodologies or scientific methodologies there are many scientific methods, there are technics, different options. To make science, there is not only a methodological option, but we'd also rather opt for methodological creativity, transparency, holistic approach, systematicity. All of these are very important elements, as well as the conscience of how subjectivity will always be part of the reality we live in, the reality we build, and, if we want to investigate this reality, we must integrate subjectivity.

Subjectivity is not the same as cronyism, cronyism is corruption. Subjectivity means people enter the scenario. From the moment we identify a problem and, even when there are statistical data demonstrating it, we choose it because I as an investigator or our investigative team subjectively give importance to the problem and, as of our subjective experience, we'll define the topic we want to link with said problem.

Another related concern: *Why always start from the problem?* From this approach of critical pedagogy, *why can't we start from dreams?* Let's investigate how to materialize a dream instead of how to solve a problem,

even when deep down it may appear to be the same, because a dream not concretized is because there is something in our reality that is not how we want it to be. It is a problem. The idea of achieving dreams motivates me more because it reflects a positive attitude, constructive with possibilities.

We must be aware of this approach of critical pedagogy; science also is a human social construct of where my experience comes from. We should see in universities it is a false contradiction when it comes to quantitative and qualitative. When I worked the research part in a Masters (there is a paper in the digital library and a video in the YouTube channel ÁBACOenRed about "**Learn to investigate, investigating**"), they were three research modules: qualitative, quantitative and there were thesis seminars, but with a condition: not separating those elements, because we must learn to investigate, investigating. Youth must start to make the thesis during master's and, depending on what they need, we must work topics. With tutors present in meetings, we addressed quantitative, qualitative, and participatory action-research, according to the needs to tackle to make a good thesis.

Another thing where critical pedagogy and our pedagogy correlate a lot, from the approach of Genuine Cooperation, is we must learn not only learn to respect diversity between people who share a dream, but also enjoy it. Enjoying diversity has its limits, which is why we place the surname of "**between people who share a dream**". When we share a dream of the society we pretend, the horizon of a society based on Genuine Cooperation, we are also clear there would be a lot of diversity between people who share this

dream. But this is a diversity we can share, from honesty, complementarity between thoughts, feelings, and contributions.

That is where critical pedagogy heads to, of course there is much more to say yet. A further element is the concept of **Dialogue in Meeting (Diálogo en Encuentro, DenE).** It is necessary to find ourselves first to establish the dialogue. If there is no encounter, then dialogue is not possible. It has to do with the very own popular education, the same popular alternative education is a concrete expression of what could be critical pedagogy.

E.E.: Very well, Doctor Herman, I find myself between what you have shared and have used a video of yours where you establish false limits between paradigms to assume the conception in the practice of educational research in our educational and scholar contexts.

Finally, we ask you for a comment to finish the interview, incidentally, and your reflections around the topics we proposed. We are certain of the value of educating critical citizens, schools are truly spaces of creativity, reflection, of applying research as a tool for improvement, and teachers must be properly up to date and with the spirit of constant adjustment to the reality we live, contributing to the quality management of education.

Then, on this subject, we would like to hear a last reflection of yours today **about the utility it has for our social, cultural context form critical citizens, use research as a tool for improvement and as contribution to the constant quality in education.**

H.V.: Without a doubt, research is highly necessary; where we fail is we have given an excluding character to research, as if it is only of great experts, closed off in their own academical world, and we forget the boy, the girl who is born, investigates.

If we put much more emphasis on this research experience from very young, that boy, that girl starts to explore the world around them, a type of contact they could have with people who accompany them in this growth, later on outside from the Center of Child Development (Centro de Desarrollo Infantil, CDI), pre-school, elementary school, high school, so research is more of a permanent methodology for learning, even more than transfer knowledge, rather discovering knowledge and build skills. Generally, discovering knowledge already exists but be careful with all the creativity nowadays in children and youth! Suddenly we can also find ourselves young students discovering knowledge, perhaps, in our context as new knowledge.

So, from childhood and youth we must delve into our research. I remember José Martí's words: "*who feeds on young ideas always lives young*". This means we promote listening to young people but listen to youth by facilitating spaces where they can discover and truly research topics of interest.

I have performed on an educative intermediate level and later in university. In university, one of the areas I worked in frequently was research methodology. I remember the experience. One is afraid that young people of 17, 18, 20 years old don't know how to research, have no idea how to. If you tell them or used to say, "Research about that", then the immediate question was: —Teacher, where can we find it? Yet, I don't have to tell them where to find it, as it is part of the research: identify valid sources to build new knowledge, build those inputs, the source to define them.

The other element I criticize a lot in any context around research is when spaces of research are created, participation must be encouraged, not for the "jury" to attack. So, here I have comments: (1) if they tell me I must defend something, I defend something when they attack me; I believe in a quality education nobody should attack anybody, it must be sharing a research experience; (2) it's defended in front of a jury. Such a horrible name: "jury"! Because what a jury does is listen to judge. This is another critic: we should not listen to our students' research experiences to judge them, rather we have to **listen to comprehend**. It is a completely different attitude where I can make questions to better understand, but not make questions thinking "I will make this question because they won't be able to answer it", in other words, cheating. That is not correct, it is not a learning environment of Genuine Cooperation. This is an educational environment aiming to compete which will always be exclusionary and is the reason our students must go to their defenses, wrongly named defenses, before the mistakenly named jury, with great fear, because they know they will be listened to be judge not comprehended.

In this case, to finish, the importance of research is its character and positive sense, always aiming for constant improvement of quality in all the areas of our lives. It is essential to research in life. Let's not give it such an excluding character to it because we all can contribute from our context with experiences.

Very specifically, us as Genuine Cooperation Pedagogical Foundation (Fundación Pedagógica Cooperación Genuina, FUPECF) and ÁBACOenRed, we are in research processes to value boys and girls from six to ten years old's quality learning, mainly in reading, writing, and mathematics. There we have José Martí with his knowing how to read and knowing how to write, in addition to logical thinking with mathematics. We don't want to do it in a competitive manner and is the reason we don't do it in schools, since they will ask where boys and girls did better. That's how they do it with standardized tests of Regional Comparative and Explanatory Study (Estudio Regional Comparativo y Explicativo, ERCE), of PISA (Program for International Student Assessment), and all of that. We do it in homes where boys and girls don't know we will arrive beforehand. We work with our homes' representatives of different communities and neighborhoods.

This gives us a real idea of childhood quality learning. Children are also included as for x or y reason are not in school, which is another advantage. So, the objective is not to say this community is better than the other, not at all. It is, rather, to identify where there could be problems, where boys and girls need reinforcement so they can level off according to indicators or minimum criteria to keep moving forward. We rely on the idea that, if a boy or a girl at ten years old knows how to read, knows how to write, according to the level it corresponds to that age and know logical thinking, also according to their age, their level, then the boy and girl are ready to keep on learning all life-long with quality.

In this research, we base ourselves on two theories. One is **learning on an adequate learning**. Not necessarily learning

corresponding to age, but rather to the level the boy or girl has. Another is named CaMAL related to **combined activities,** diverse activities enabling quality learning. Then, on the first phase, learning quality is assessed; later, we work with those girls and boys in need of reinforcement for the development of learning basic abilities.

These are truly interesting and beautiful experiences because we involve students from Normal Schools. They also learn from this research experience according to their future teacher practices, as students, but later insert themselves into teaching practices as professionals.

If you allow me to, I would like to finish with a thought from Martí in which the term Genuine Cooperation is not used, but it does refer to one of the basic values, fundamental values of Genuine Cooperation, as it is **solidarity**. He says: "*We look for solidarity not as an end, rather as a means for Our America to fulfill its universal mission*". I love this because it characterizes José Martí's greatness thinking, who does not only talk about Cuba, but also Ouramerica, something we have truly present in our thoughts and feelings. Thus, this type of exchanges possible through this interview are very rich for us, as we broaden it a lot, as well as exchanges with my Doctorate tutor in Cuba, Dr. Norberto Valcárcel. Also, I enjoyed my time there a lot, so many years ago, and we keep communicating daily. So, my great gratitude to Cuba, the Government of Cuba, all of you, in one way or another, we have communicated and have been able to exchange. Thank you so much!

E.E.: We reiterate our thanks from the Colectivo Editorial de la Revista Atenas de la Universidad de Matanzas, and Colectivo

Editorial de la Revista Iberoamericana en Investigación Educativa, for dedicating time, sharing with us your experiences, knowledge, impressions, and, above all and most importantly, contributing to science and Latin-American education with sense and we stress originality and authenticity. Thank you!

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book
commentaries

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Management quality in the organizational culture of the Nicaraguan Higher Education Institutions. Towards the instauration of a quality culture at UNAN-Managua

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The book "Management quality in the organizational culture of the Nicaraguan Higher Education Institutions. Towards the instauration of a quality cultureat UNAN-Managua", coordinated by Ramona Rodríguez Pérez, Jaime López Lowery and Isaías Hernández Sánchez, welcomes all readers to delve into the ineluctable web of controversies and challenges relative to quality control and its university level contextualization, well-seasoned, this time, by the particular expression from the topic on higher education in Nicaragua. As the analysis and presentations of experiences around the topic become more exhaustive, emerge the need to take new challenges and generate knowledge about bases each time more solid and scientific, tending to the continuous betterment of quality on Higher Education Institutions (Instituciones de Educación Superior, IES) in Latin Americans and Caribbeans. Quality as concept has been

widely handled by many authors since the 60's and 70's on the past century, with emphasis on the 80's and priority on the 90's; overall, in the last reunions and conferences of international organisms dedicated to higher education.

When conversing about "quality", it includes systems, processes, material and methodological resources, decision making, dialogue, and negotiation between internal and external actors, leadership, teamwork, information, and others. Shortly, quality is associated with the dynamic of surroundings and, the identity and development of each IES, implying it must also be managed adequately to achieve results and expected impacts.

In the quest of giving practical sense to these routes, the book is supported by a thorough analysis and valuation, all tightly intertwined with the development of quality and its management on Higher Education Institutions in Nicaragua and, specifically, at UNAN-Managua.

On the initial pages it is evident the importance is granted to the unyielding connection between strategic administration and quality control in higher education. Mainly, the first section of the book bonds us to the comprehension of the real administration systems to the quality are those located at the center of attention to futuristic Mission and Vision of its development, from which emerge and guided the main challenges and obstacles of quality in university institutions.

Nevertheless, the relation between the philosophy and quality administration has not always been recognized, because they have overlapped under a few analysis edges and remote spaces of converging quality projection of an IES based on institutional demands and environment.

This work embraces a clear viewpoint of an IES aiming for quality as it considers it a basic pillar for its development, institutional strategy, in which quality and continuous improvement is promoted. The strategy is contentious, between other components, of the Mission, a more precise and clearer image of the future projection of what is intended to be attained, the objectives and goals contain key elements to guide the improvement of quality and, generally, institutional development. These must be considered as an input to formulate quality patterns and/or elaborate improvement plans.

The book stresses the value of working effectively seeking the promotion of quality culture in the university community, as, if not prioritized, little seats and roots will find actions are made to generate quality; risk of fracturing the growth spiral in search of steady growth, leading to irregular and atomized actions breaking the "must be" of university life. The above steers us to ponder on the crucial need of consistently working on beliefs, mutual values, attitudes, and individual and collective behaviors of those who integrate each area inside IES. The resistance of changes and use of the powerful information tools must

be acknowledged to enhance and merge results, and desired result.

Moreover, special treatment is granted to quality concept as a key element of steady rise in the development of organizations in general. Its notion has different approaches given the application scope, and has evolved according to historical, social, and economic contexts. Since the sixties, quality mediation was only related to the business environment as production control and supervision. However, through the help of various authors, classical quality theories and principles have worked as foundation for its application in real consolidated contexts. Approaches differ from satisfaction with clients' needs, to reach excellency through the absence of deficiencies. This leads to tie subjective elements and producer and consumer's objectives.

Scientific literature marks complexity to assume a distinct quality concept, considered as a polysemic element. Thus, meaning multiplicity requires observing and understanding diverse conceptual slopes with the aim of synthesizing this construct's definition, resulting in carefully handled in the reference book. Thus, it is determined a consensus about the concept of quality in the university field does not exist. Most convenient results, then, conceive it from its polymathic and relative essence, and based on it, embody, implement and activate it. What is certain is quality in an IES is associated to the improvement, institutional capacity to address demands externally and internally, insofar as to responsibly fulfill its social mission. It is an intricate idea in higher education which links the processes with results and effects in society's demands.

The continuous development of the concept of quality and its execution through the different standards, variables, indicators, or others must generate a culture valued and legitimized by its members as useful for the university administration processes are not minimized to isolated events and procedures, rather convert it into daily practice, adequately suitable by IES's actors and, firs, by its directives.

Proper treatment of the topic in the book leads to also accentuating it is not possible to think in quality without featuring the value of its administration. Galarza (2015) considers:

> Quality management has a greater reach than inspections or control as mere validation of results completed by IES, since, notably, it promotes the enhancement and steady improvement of university activities; it must be integrated into the system of institutional management, demonstrating coherence to university processes and guiding role. To manage quality, it is required, among other factors, leadership directives and engage the proactive participation of the university community, with insights to contribute to the satisfaction of its users and their needs. Regarding the rising complexity and integrality, it is essential to design university policies guided to develop the quality, which must be properly executed and assessed every so often, to realize and inspect the cohesion of results and effects inferred from its activities.

The book's authors conceive quality management as an institutional compromise, which execution addresses a set of activities neatly arranged, pursuing the efficiency of its processes, functions, and services, to position and render account before society, control organism, and international standards, as quality reference entities.

As stated above, in the document titled "Quality and relevance of the programs of higher education", acted as a cornerstone in the III World Higher Education Conference debates celebrated in Barcelona, España (2022):

> As any type of evolution, the definition of quality in higher education evolves and adopts different forms as it goes from one stage to another on its own development. As concept, sufficiency to the purpose has a definite role in supporting systems, institutions and higher education programs to improve structurally and take advantage of the systems' capacity to self-reflect and boost the foundation of the identified deficiencies. However, current approaches of insurance of higher education's quality, are largely focused on inputs and processes, do not answer to expectations every time greater held about higher education.

The above leads to clarify quality and need to manage it as an element built in a perennial manner, it acquires new nuances and approaches in light of the institutional and contextual demands, revealing its historic-concrete, social, and culturally determined character.

Within the second section of the book, topic's contextualization of quality acquires special hues, in the frame of its direct application to the context at UNAN-Managua, stressing the link with information systems, self-evaluation, internal oversight, and risk management.

According to the above, the Action Plan CRESS 2018-2028 establishes as goal: "promoting the availability of updated and pertinent information about efficiency of the formative processes in the region". It recognizes information as an essential resource in search of quality continuous improvement in IES. Afterward its established as strategy "Harmonizing statistical databases and other information systems of higher education as inputs for the elaboration of diagnostics and studies to add to the formulation of institutional and public policies, national and regional".

In IES, information exceeds its fixed role of being a data set to become a key strategic resource. Therefore, it is not merely compiling data, but identifying, processing, and using the crucial information to achieve long-term goals. The distinction and emphasis of the information becomes a core foundation for efficient management and decision-making in higher education.

In this scenario, it becomes clear the urgent need of conceiving information systems enabling IES's quality, which proactively contributes to answer higher education's challenges. Similarly, in post-modernity, quality management in higher education acquires new challenges and meanings, which, certainly, confers the digital age we transit, powered by

the Information and Communication Technology (ITCs) and imprint of university 4.0, that ought to be adjusted to our conditions, without losing sight to constitute an inescapable imperative.

Another element addressed in the work is connected to processes of institutional self-evaluation executed in the institution under a collaborative approach, self-critical and critical, transparent, democratic, and reflexive, generating changes and is guided to improvement. In this regard, there are diverse methodological routes, structured in assorted or interrelated phases, satisfying certain demands through its results. It is required to have internal and external information to be properly planned, organized, executed, and controlled.

Through this process, it has been possible to know the progress levels university has towards the achievement of quality standards, broadening its capacity to regulate itself based on a monitoring and control, having its own installation and resources, through which seeks to answer to current and future society and the institution's demands.

Within this section, relevant analysis surrounding politics, norms, plans, proceedings, registers, and organized methods are also carried out, as part of the Internal Control System (SCI), which comprises an essential tool for IES. It is employed to execute a systematic diagnosis of the progress and susceptible areas of improvement, guided to the compliance of each instance from the institution's objective. The adoption of SCI has been key to the institutional

culture promotion in sync with processes of self-evaluation oriented to constant improvement corresponding with the Mission, Vision, and Strategic Goals.

Another interesting edge discussed is related to the need to assist risks that might alter the strategy's formulation, its application, and control, transforming it into an IES's imprint, and for UNAN-Managua. It is worth noting, amid the high surrounding's dynamism and vulnerability universities are under, the value of risk management and its contribution in the improvement of strategic management's quality is reinforced. To address risks, identifying them is lacking, it also requires anticipating and preventing them, enforcing actions to identify and value them adequately, prioritize them and be faced with a contingency plan, properly applied and controlled.

In the third and last section of the book, the Human Talent Management System implemented in recent at UNAN-Managua is emphasized, characterized by its systemic, integral, and humanistic approach, which benefit not just the recruitment staff with the need to enhance scientific-technical preparation, stimulating innovation and generation of creative answers to underlying problems.

In this matter, careful attention to proactive and transformative leadership must be prioritized at IES is underlined, to attenuate the resistance to changes, mobilize efforts, and achieve greater effectiveness in each of the processes developed. Thus, UNAN-Managua promotes a quality culture centered on people and their needs, corresponding with demands and functions performed

in the country. The management of human talent is a university policy of deep meaning prone to the enhancement of quality and institutional development.

It also implies the way cohesion and rescue of values between members of the university community have constituted a key element to reinforce the nation's resilience. The timely debate, reflexive critic, purposeful and consensus search have assisted to regain trust and stability, which made possible the coexistence and harmony to defend citizens' rights to live and coexist in peace.

Likewise, the university community has taken the unwavering commitment of constantly renew itself and work in function of quality's continuous improvement, united to its future Mission and Vision, influencing the directives' decision-making process and systemic evaluation of institutional performance.

Lastly, I occupy the space to thank the opportunity of not solely relishing this book's reading, but also serve as a motivation bridge for other people, delve into its pages and discover the accurate messages it offers about diverse topics related to quality management in IES.

To my judgement, his work's main contribution is it strengthens theorical-methodological construct around university quality management and, alongside, the subject being an unfinished product, it endeavors us towards new analysis perspectives and the realization of other studies and investigations in this field.

We congratulate the UNAN-Managua for this initiative which, without a doubt, helps to the development of quality management, not just institutionally, but also projected and has a greater impact on Nicaragua's higher education.

documental
memory

Photograph: CNU

DOCUMENTAl MEMORY

The Sandinista Popular Revolution, from the triumph in 1979, prioritized education as a Politic Project, constant with their historical compromise with Nicaraguan people. The educational policy was outlined by three great lines of action, these were: more education, better education, new education, which, from its course, entailed meaningful outcomes.

The prioritized objectives, goals and populations in the main project and educational policy of the Sandinista Popular Revolution acquired a strong compromise regarding the education project, diligently and with solid results. The education project in 1980 made substantial reforms regarding the National Educational System structure, this led to curricular transformation, training, and capacity building of teachers, education administration-participatory, etc., as guaranteeing Nicaraguan's quality in education.

In Documental Memory of Índice Nicaragua Journal sixth edition, the reader will find the third chapter of the book:

La Educación en el Marco del Proyecto principal de Educación (1980-1986), titled *Betterment of the Educational System's quality and efficiency*. It reveals education to Nicaraguan people as a priority of the revolutionary project, when efforts and tangible results are merged to broaden education coverage a 94 % in 1979 to 1986. In this historical period, there were deep educational reforms in the National Education System, for the progressive insurance of a higher coverage in decent environments, teacher training in the various normal schools and universities, as well as other expressions of education's quality improvement. This connects the advances of education evolutionary transformation in Nicaragua on the second half of the Revolution, with the application of strategies, initiatives, creativity, compromise, delivery, and popular participation for the betterment of quality in education.

3.1. Goals, Objectives, and Principles of the New Education.

In Nicaragua, the beginning of a revolution guides to achieve deep changes in all its structures with the purpose of creating a new economic and social system in which people are metamorphosing themselves to become a historical subject of their own destiny, the popular participation has great weight in the definition of their own political, economic and social system. From this principle and using rights and its significant revolutionary experience, organized people joined in the National Education Consultation to obtain criteria which contributed to defining New Nicaraguan Education's Goals, Objectives and Principles, constituting a democratic exercise of people in the decision of something very much their own and transcendent as it is their education.

We consider, defining Goals, Objectives, and Principles of Education of our country with broad national participation, constituted a valuable and innovative fact not only as the political-philosophical framework of the new education was obtained, rather because it also gave continuation to the consolidation of a new methodology of participatory education, which has been systematized and generalized in the ordinary practice of national education.

Education goals convey the image of men who want to be educated, not an abstract ideal image, but the image of men who must play a role of conscious builder in and of the New Society for its creative form and as a assets and material producer and spiritual values.

In the proposed purpose of the New Nicaraguan Education, we find the image of men we are in pursuit of training; in its statement is expressed: "New Education in Nicaragua proposes as goals: <u>Create plans and integrally the personality of the New Man</u>... starting from reality, creative work and historical circumstances we live.

This New Man must be integrated by political, social, and moral qualities of a New Society. In the political, it must be a patriot, revolutionary, solidary, and compromised with workers' interests and farmers and working masses, anti-imperialists, against all form of exploitation, racism, discrimination, and oppression, advocate for unity of the nation around our working classes by national sovereignty, justice, liberty, and peace in the region and world.

Morally and socially, they must be responsible, disciplined, with critical capacities and self-criticism, endowed with a scientific vision of the world and society, sincere, fraternal, modest. These are, among others, qualities part of the New Man, qualities to be achieved needs a whole process in which we are immerse, making of the purpose of our education a commandment in educational work entrusted to us.

General Objectives of Education are a base and starting point allowed to specify objectives, contents, and methods the development of each type and level of education in different subsystems making up the Nicaraguan Educational System.

Thus, full and integral education of the New Man, we will achieve it by offering students an education to encourage them to be

agents of their own education, stressing about the domain of scientific and learning methods, educating them in and for creative work and developing conscience about socioeconomical and cultural value of work and raising awareness about the worker's fundamental role in the creation of a new society; developing their convictions about values and principles of the Sandinista Popular Revolution; educating them in the thought and example of Heroes and Martyrs of our homeland and Revolution; growing in them the conscience to strengthen independency and sovereignty homeland is necessary to be part in the defense; promoting friendship and cooperation attitudes with people and governments globally under equality and mutual respect bases; infusing and boosting a deep respect for human rights; making them penetrate the roots of our own culture and reject alienating cultural elements, stimulating the capacity for critical analysis and self-critical and seeking to develop and improve each time more mental and physical health. Objectives 10 and 11 point out specifically the student must be "Provided a humanistic, scientific, technological, political-ideological, moral and physical education applied creatively to the transformation process of our own reality", that it must "Train and educate both technically and politically, the human resources needed for advance and consolidation of the revolutionary process, coherently with global plans of economic-social progress".

Each of the twelve Education General Objectives are being achieved in terms of the student going around the Educational System structure and these objectives are reflected on plans and programs of study and the development of educational teacher activities with connected to systematic influence of all education.

General Principles of the New Nicaraguan Education, are great general lines revealing the educational policy expressed on Goals and General Objectives, establishing itself in these principles among other aspects: education is an inalienable and core right of all Nicaraguans, which will be based on serving a solution to the great economic and social problems and in primary function and indeclinable of the State, the productive and creative work will be formative elements and integral part of study plans through the conjugation of theory with practice and combination with manual work with the intellectual, so New Education is conceived as a system integrated by various subsystems and media outlets collective are considered an important part of the educational process, the New Education will stress and systematize vocational training and occupational orientation's tasks, which must be assigned a vital importance to the functions of research of educational institutions, the emulation will be present in the New Education as a way of recognition and stimulation for tasks and compromises' compliance drive steering to the betterment of educational process, which will respect parents' liberty to choose for their children schools or colleges they deem convenient for their education, and established funds to finance the educational system are considered a social investment.

A brief analysis to the behaviour of three great lines (expansion, improvement, and change) in which have been developed the educational Nicaraguan policies and

actions, allow us to ensure education has been throughout he last seven years, one of the more deeply revolutionary experiences where people has made their own their education future, proof of it has been the approval of Goals, Objectives, and Principles of the New Nicaraguan Education through a singular procedure of training and its integration in Title VII "Education and Culture" of the Political Constitution, enacted on January 9th 1987.

This constitutes the framework of the educational transformation guiding strategies to boost New Nicaragua's educational development.

3.2. Education System's New Structure.

A meaningful action and great implications in the national education transformation, which necessarily drive to improve quality in education and System's efficiency, has been the transformation of the Educational System's structure; actions carried out on multiple efforts and have added new theorical and practical elements in search of overcoming disarticulation and discontinuity characterized the structure of the Nicaraguan education before the victory of the Sandinista Popular Revolution. Thus, during the last seven years, the Educational System's evolution has been progressive, dynamic, and dialectic as a self-demand of the own education's nature in a country in revolution. In this context, between 1980 and 1984 the educational structure was made in a series of adjustments of transitory character which still hadn't satisfactorily overcome articulation, integration and coherence problems.

The problematic is still present in the educational structure operating and acceptance by the National Reconstruction Governing Board of the New Education's Goals, Objectives, and Principles in 1983, where is established in the General Principle number six "The New Education is conceived as an Integrated Systems by various subsystems…", driving the National Board of Education to make a problematic's deeper analysis, which yielding to the creation, display, study, and acceptance of an Education System's unique structure organized in five subsystems, defining simultaneously the corresponding regulatory, administrative, and executor bodies and considering the new approved structure, would be progressively applied and perfected as progress made in the execution of the Global Plan of Transformation and Development of the Education and Formation Technical and Professional Charts required for its effective functioning.

This unique new structure, is conceived by educational levels and modalities of progressive education with objectives and common aims in terms of a final product and organized as it was already expressed, in five subsystems, being the following:

→ Subsystem of General Basic and Secondary Education

→ Subsystem of Popular Education

→ Subsystem of Technical Education

→ Subsystem of Higher Education

→ Subsystem of Training

This way, the Subsystem of General Basic and Secondary Education offers general

culture and scientific and humanistic basic education. It is structured in: Pre-school level, a level of General Basic Education of nine grades and a Pre-University of two grades, additional to three grades related to Teaching Education after the nine grades of General Basic Education.

It is important to signal, that at the interior of this subsystem functions Special Education, conceived not only as an education cycle of Basic General Education, rather as a program of characteristics very own to give systematic attention to the scholar population that presents deficiency or alterations in their development, which precludes the compliance of a program of regular education.

The subsystem of Education for Adults, through the Program of Popular Education of Adults offers a basic general education allowing students to manage basic instruments of learning, consolidate their revolutionary consciousness and continue training; is regulated by adequate educational methods and principles for adults, given it doesn't have records in the previous educational structure, as its creation as subsystem has been performing actions guided to its progressive development, giving educational attention to adults through different modalities described before in this report.

The Subsystem of Technical Education offers education and qualification of the work force to production and services. It is structured in two levels: Basic Technician and Medium Technician, in different modalities corresponding to Agricultural Technical Education, Industrial Technical, and Education for Administration and Economy. To the Subsystem enter students of the Subsystem of General Basic and Secondary Education and Popular Basic Education levels, to pursue degrees articulated with Higher Education in specialty related areas.

The Subsystem of Higher Education forms the highest-level professional charts on scientific, humanistic, and technological branches. Offers contents of specialized education through methodologies adequate to level and plans and programs of systematic studies, includes levels of undergraduate and postgraduate.

Its insertion as a structural component of Educational System, has been an vital advance in the conception of education as a unique system, for allowing Higher Education a greater relation with the rest of structures, which has driven to the start and realization of many tasks altogether, which progressively allow to overcome obstacles gaps mainly referring to the orientation content and quality in education on all subsystems.

The Subsystem of Training develops educational actions connected to requirements for workers' better performance in their corresponding jobs in the field of production and services, boosting training actions to the initial training until specialization, including learning, enabling, recycling, etc.

This Subsystem, just as the Popular Basic Education, doesn't have records in the educational structure, consequently, is in a phase of organization and initial operation and its inclusion as a component of the Educational System has contributed positively to its functioning and to improve quality in education.

In what has been expressed about the New Structure of the Educational System, it can be stated the progressive application of it, has had significative repercussions on the organizational and technical-methodological aspects related to planification and administration with contents and methods, as well as with training and education of teachers and charts of direction and educational gestion.

These repercussions were faced through the application of concrete measures that allowed advancing the quality and efficiency improvement process of the Educational System from the New Structure's application.

However, we still have to face new stages and overcome obstacles, mainly those not from the functioning of General Basic education of organization's nine grades and effective development of Popular Basic Education of Adults, and generally with relations and articulations between various levels and educational modalities, until achieving a coherent and integrated reality functioning of the Nicaraguan education as a Unique System integrated by all subsystems.

3.3. Curricular Transformation

Nicaraguan education's transformation has become rich in experiences and results, fruit of multiple and varied efforts made to improve Education System's quality and efficiency.

For its strategic character and its impact on quality in education, stand out among those efforts, ones directly linked to the curricular transformation process, guided to progressive and systematic achievement of deep changes in the conception, components, and curricular processes developed on the different levels and modalities of the Educational System, aiming to establish its total coherence and adequation with the new conception of Nicaraguan education and answer the needs of society's development.

Curricular transformation process, started almost immediately after the Revolutionary Triumph of July 1979, with the review and reorganization of study programs in effect at said date, have had continuity through these seven years of educational development in the Revolution, acquiring characteristics of higher deepening as consequence of the definition and officialization of New Education's Goals, Objectives, and Principles in march of 1983 and conforming its essence and legitimacy by defining in 1984 a New Structure of the Nicaraguan Educational System, establishing a quantitative and qualitative organization different from the levels and modalities of our country's education.

As result of the advances in the curricular transformation during 1979-1986 and the curriculum's development of different levels and educational modalities, all which obviously, aim to improve national education quality and impact notably on the attainment of efficiency higher level of the Educational System.

Between the most relevant scopes of curricular transformation during this period, stand out:

→ Elaboration and progressive application of a new curricular model, derived from a conception of General Basic Education, in the 7 first grades of this, foreseeing

for 1988 the culmination of this process and total conformation of the 9 grades' EGB model.

→ Validation and improvement of curricular model correspondent to Pre-school Education.

→ Development of vital curricular elements to boost Special Education in different modalities.

→ Homogenization and progressive improvement of curricular model for teacher training.

→ Production, for the first time in the country, of national school texts created in correspondence with the objectives and official programmatic contents.

→ Special attention for the curriculum, to populational groups characterized (ethnical groups of the Atlantic Coast and educational population of rural area in multigrade modality).

→ Elaboration and application of a curricular innovative model in Basic Education of Adults.

→ Application of methodologies and conformation of innovative curricular structures in Adult Education and diverse modalities of General Basic Education.

→ Elaboration and application of new curricular designs in degrees of Basic level and Medium level, offering recently conformed Technical Education Subsystem.

→ Reorientation and adequate organization of components and curricular processes of technical and professional training's different modalities.

→ Adequation and improvement of different professional degrees' curriculum developed by universities and other Centers of Higher Education.

The prior mentioned advances have been attended by important training and educational supervision's actions and has had, as common denominator, participative character of its realization.

However the advances, together are a strong contribution to the global process of educational transformation boosting the Revolutionary Government, curricular transformation has faced some problems and limitations that have hindered its unified development and its total coherence to materialize the systematic conception of the Nicaraguan Education.

Among the problems and limitations, noted as relevant on one hand the differences as for conceptual elements and methodological criteria used to carry out the process on different subsystems, which has implied diverse strategies and development rhythms. On the other hand, actions of curricular transformation have placed greater emphasis on curriculum planification and design, being lower the attention to execution, follow-up, and evaluation of it, which has limited its reach a little.

The above has been an object of attention in the Educational System hence, in 1986 it was explicitly defined the National Policy on Curricular Transformation clearly defining main political, conceptual, and methodological elements, additional to global strategies to guide current and future actions of curricular transformation in all subsystems of the National Educational

System, to achieve unity and coherence of the process and its complete adequation to new educational conception.

It is vital to notice the formulation this National Policy on Curricular Transformation, as well as all relevant actions of management process and educational development in our country, it had the valuable contribution of different instances of educational structure as result of a broad process of consultation and participation.

The application of the National Policy on Curricular Transformation will be facilitated and guaranteed through the execution of a National Plan of Action in the strategy of educational planification framework for medium term, it will start guiding in 1987, the development of operative strategies and actions to will make effective the Curriculum transformation in each national education levels and modalities, to achieve each time better quality in educational services and higher levels of efficiency in our Educational System.

The Training and Education of Teachers, the Review and improvement of systems, contents, and training methods, education, and enhancement of teaching staff attending education of children, young people and adults is, obviously, a need in the transformation process of Nicaraguan education, while the teaching function development is an key factor to determine quality in education and Educational System efficiency.

In attention to it, throughout the last seven years, a series of measures guided to expand and improve substantially have been applied to educational services for training and teachers education, especially Elementary School and Popular Teachers, attending Adult Education so their scientific preparation and pedagogical capacity will be more effective and consequent in conditions to make higher quality and efficiency teaching assignments.

Among the applied measures are:

→ Creation of Normal Schools in regions and prioritized areas, having been increased in 9 the number of these type of School existent in the country.

→ Review, unification and improvement of Plans and Programs of Study for Training and Professionalization of teachers and creation of programs of Training of Teachers of Pre-school, Fundamental Education and Physical Education.

→ Programs and actions of professionalization of teachers aiming to decreasing empiricism index promotion.

→ Programs and actions development for Teaching Training, both in terms of pedagogic preparation and levels of scholarity elevation.

With the purpose of promoting with higher effectivity the application of these and other measures and achieve an integrated development and coherent, in function of offering an answer each time more adequate to the development needs of the teaching-educational process in the framework of socio-economical transformations the country lives, is currently working in the formulation of a National Policy on Training and Education of Teachers, establishing

policies lines and fundamental actions in this area, guide the integral attention and articulated development of training programs and teachings of the staff that demands the educational development of the country on short, medium and long term.

The foregoing, together with efforts, even with the limitations the country lives, are done to promote economically and socially teaching labour, applying measures to ensure conditions of work according with the importance of the social function they perform, will allow to achieve in progressively a higher quality in the teaching exercise and consequently, contribute to improve quality in education and efficiency of the national educational system.

3.5. Participative management in the process of New Education's development.

Inside the global conception of a Popular Revolution constituted by a large social base, arises the need of generating and establishing new forms of organization and administration in the global context of the nation and basic guidelines of the National Reconstruction Government, participation of bases represents an inherent and fundamental element.

This popular participation has its main root on the full participation of people in the assumption of power, it was enhanced in National Literacy Crusade and National Consultation for the definition of Goals, Objectives, and Principles of the New Education and is being consolidated in all and each process and development actions of our society in transformation. For example:

→ Popular participation expressed in specific forms of collective work through masses, gremials, and students' organisms and even spontaneous groups with high politic will.

→ Workshops of multiplication and consequent effect of it in specific training, programming, and information-communication ways.

→ Popular mobilization in specific aspects of campaigns, student sciences and productions workshops and student production battalions.

→ Popular creativity giving answer and originals to the need of schools' construction, toys and educational materials productions.

→ Popular organization as foundation of a mobilization and more effective participation.

Hence, our educational model creates and recreate, as basic support, new organization and direction methods of work, such as original and unique styles guaranteeing effective popular participation in educational management.

These new organization and administration forms are conducive to the educational community participation in search of efficiency improving and administration of the new education, through the process of deconcentration and decentralization functions, in consonance with the national educational policy guidelines and the Educational Sector Program of Reactivation demanding administrative decentralization of education.

In this context, it was considered educational regionalization could be

an administrative model of educational management in Revolution, to contribute to social, technical, and scientific development of the Region, promoting opportunities of training, education, supervision, and take better advantage of resources according to the qualities and availabilities.

It is appropriate to highlight the Ministry of Education inside the new space created by the Revolution of appropriating democratic strategies administration, establishes in its own way a process of educational regionalization in the 70's had been developed as a style of management and administrative decentralization in Latin America and particularly Third World countries.

This original form of educational management in the Revolution it proposes to link popular participation to educational processes, to improve quality in education and elevating efficiency of the Educational System. This explains all this process of educational management is placed inside a conception and practice of development of education participatory planification.

The process of participatory planification, inserted in historical-political moment of the Sandinista Popular Revolution, supposes the real fact of making people participate in the necessity's expression, in search of viable alternatives and coherent solutions and execution of more adequate alternatives, according to the interests of the great majorities.

This process of participatory planning has been improving and enriching in the last two years with effective participation of those involved in education, strengthening

the educational management mainstay.

It is convenient to add the formulation of politic lines and educational actions, that substantiate the Annual Operative Plans with its respective Evaluation and ensure participation of bases, constitute meaningful contributions on the planification and therefore qualitative advance of education. In this process, it occupies a very important place in the creation and functioning of Planning Network Headquarters-Regions, developed in an integrated form by multilevel, in a coherent coordination between the Responsible of Planification and the Responsible of Programs on a Central Level, and the Responsible of Planification with the Responsible of Regions, Zones, and Centers.

Thus, the Educational System of Nicaragua a Net has been established to promote educational development and has its relation level and coincidence with Regional Network for Training, Function and Investigation on areas of planification and administration of Basic Education and the Programs of Literacy (Educación Básica y de los Programas de Alfabetización, REPLAID).

From this entire planning process, it has emerged strategies the own educational practice has perfected, aiming to formulate plans to medium and long term, of conformity with plans of national development and educational priorities of the Revolution.

All these efforts guided to improve the process of educational management, has placed a series of actions of leaders' Training and Education and key charts of

education, both in Headquarters, as the Regional and mediation instances.

In this regard, it has been created a Training Network arising as a complementary strategy the Evaluation, Programming, and Educational Training Workshops (Talleres de Evaluación, Programación y Capacitación Educativa, TEPCE) and Pedagogical Encounters, taking place systematically in all and each country's region, with the aim of promoting training action to contribute to the betterment of technical-pedagogical quality of all involved in education.

This Network of Training is included in the global framework of Regional Network of Training of Staff and Specific Groups in the Literacy Programs and Adult Education (Red Regional de Capacitación de personal y de Alfabetización y Educación de adultos, REDALF), of which Nicaragua is a member of. Our Network, which constitutes a meaningful advance in the qualitative development of the revolutionary education, makes feasible the application and boost of REDALF and implies an important effort that could be fully developed in the context of Regional Network Training, Enhancement and Education of Teachers (Red Regional de Formación, Perfeccionamiento y Capacitación de Educadores, PICPEMCE).

These efforts are still not enough to face the requirements and compromises a process of social transformation demands, but each day are done new pledges for answering a new, transformational educational new, transformed reality, generating in the practice a participatory methodology, original and creative, own of a country in

Revolution that goes forward in the middle of its limitations, is strengthened in the middle of sacrifices and is consolidated in the middle of aggression.

3.6. Other measures and actions to improve quality in education and elevate efficiency of the Nicaraguan Educational System.

→ In the framework of National Educational Policy and according to educational transformation global strategy, on par with fundamental elements indicated (application of New Structure of the Educational System, process of Curricular Transformation, Training and Education of Teachers, participatory management, etc.) have applied another series of measures and are carried out a countless number of actions directed in its group, to improve quality in education and Educational System achieve higher levels of efficiency.

→ Among these other measures and actions that also integrate the strategy of transformation of Nicaraguan education, it should be noted the following:

→ Impulse each time more effective to the actions of Educational Supervision, with the purpose of supporting, follow-up, and evaluate the educational work, specially related to the methodological work done by teachers, principals of centres of study and technical personnel of MINED.

→ Strengthening and attention very particular to multigrade teaching, especially the rural area.

→ Development of school and non-school attention forms in all levels of the Educational System, particularly Pre-school Education and Adult Education.

→ Impulse educational nuclearization as an instrument for social development integrated in the rural area.

→ Link education with work through various actions to extend from creation of Rural Schools of Education and Work (Escuela Rurales de Educación y Trabajo, ERET) and Agricultural and Livestock Farming Schools (Escuelas Agropecuaria Campesinas, EAC) for adults, until the creation of Science and Production Workshops and integration of Student Production Battalions (Batallones Estudiantiles de Producción, BEP) organized to harvest crops mainly coffee and cotton, with productive and educational purposes.

→ Amplification and strengthening of School Libraries network.

→ Development of coprogrammatic activities to promote self-learning and participation of all Educational Community in the teaching process development.

→ Realization of actions for the betterment in the organization and administrative functioning of the Ministry of Education structures in its central, regional and zones, which has implied the definition and elaboration and correspondent adequations and adjustments to the respective organization charts, Function Manuals and Charge Manuals.

→ Boost and development of Educational Research as instrument and permanent action in the process of National Education transformation.

Synthesis and Projections

Starting from political will of offering education to all Nicaraguans in the popular, democratic, and antiimperialist process, the Ministry of Education, conforming with this decision, has been creating conditions, previsions, and perspectives to answer, medium and long term, to the educational demands and formations of needed human resources for the creation of a new society and its transformation and development.

These conditions, previsions, and perspectives go beyond the support to influence objectives of the Main Project of Education for Latin America and Caribbean, as it can be found in the recently enacted Political Constitution of Nicaragua (January 9th of 1987), in its Title VII Education and Culture, unique chapter, orders textually:

Arto. 116. "Education has as an objective the full and integral formation of the Nicaraguan; doting them of a critical, scientific and humanist consciousness; develop their personalities and sense of dignity and train them to assume tasks of common interest demands the nation's progress; therefore, education is a key factor for the transformation and development of the individual and society.

Arto. 117. "Education is a unique, democratic and participatory process, which ties theory with practice, manual

work with intellectual and promotes scientific research. It fundaments our national values, on our history's knowledge, in the reality of national and universal culture and steady development of science and techniques; cultivates own values of the new Nicaraguan, according with established principles on the Constitution, study of which must be promoted".

Arto. 118. "The State promotes family, the community, and people's participation in education, and guarantees the support of social media outlets".

Since 1979 it has been the highest preoccupation in education, firstly constituting itself the purpose of "Battle for a Popular Basic Education" to achieve towards 1990 for all children in age have acquired or pursued the four first grades of education, as a fundamental condition for an even longer term, all Nicaraguans must achieve nine grades as minimum.

Since 1979, and as one of the first measures of our Government and people, the decision of eradicate illiteracy and offer a real opportunity to adults to a basic and labour education integrating them with advantage and conscience in the political tasks and country development was taken.

Since 1979 it was decided to offer quality education, and it started a whole task of improvement and transformation of Study Plans and Programs, for different educational programs included training and teacher education, also powered progressively the application of the new conception and methodology of popular Nicaraguan education.

Since 1979 it has been operating transformation in the management, in the organizational and administrative structure and educational planification. All the above has implicated necessarily the Structure of the Educational System transformation.

In all this process of educational management, people have been effective participants in the great action, especially through the participation of organized teachers, parents through the Consultive Advisory Councils of all instances and levels of decision, students through their organizations, etc.

Plans to medium- and long-term face, not only through plans technically structured in all its components, but also through the development of specific strategies to attend priorities that the country's reality has defined to support politics lines and actions for the country's economic and social development, such as:

→ National strategy of educational development in the rural area.

→ National strategy literacy and popular education of adults.

→ National strategy of Curricular Transformation.

→ National strategy of Administrative Decentralization, etc.

Regarding the first goal of the Main Project of Education for Latin America and Caribbean of "Ensuring schooling before 1999 to all kids in scholar age and offer them a minimum general education of 8 to 10 years old, National Strategy of Educational Development in the Rural Area, it proposes a real opportunity to

access the education in equal conditions for all Nicaraguans, as in the article 125 of our Constitution:

Arto. 121. "Access to education is free and equal for all Nicaraguans. Basic teaching is free and mandatory. Communities of the Atlantic Coast have access in their region to education in their mother tongue on determined levels, according with plans and national programs".

In this National Strategy of Educational Development in the Rural Area, it will contemplate in a first stage concentration efforts in Fundamental Education (four first grades), as well as those programs and prioritized areas of national development. Likewise, it will have to foresee the increase of educational services and assignment of human resources and materials, while it is considered the reorientation and potentiation of experiences and educational generated by Rural Educational Nucleus (Núcleos Educativos Rurales, NER), Farmer Agricultural Schools (Escuelas Agropecuarias Campesinas, EAC), Basic Production Cycles (Cíclos Básicos de Producción, CBP), etc., for integral educational development in the rural sector.

Teacher training, popular education methodology, curricular design, etc., are another component of the Strategy that, in education must tend to eliminate the existent gap between the country and city.

Regarding the expansion of educational services of 1986, it attended a total of 656,532 students between grades of 19 and 90, which 451,006 (69.0) are on the first four grades. In the Ministry of Education Annual Operational Plan, it has established

as goal for 1987 an enrolment of 705,079 students for nine grades, 484,97 (68.8%) will study years 10 to 4th.

According with the perspective of Global Strategy of Educational Development in Nicaragua, it is estimated in a preliminary manner enrolment of the nine grades will increase in 1990 to 786,12 and in the year 2,000 to 1,24,500 students, while the first four grades will cover an enrolment of 521,410 (66.3%) in 1990 and 809,700 (64.9%) in the year 2,000 (see the following table).

ENROLMENT OF 10 to 90 GRADE 1986, GOALS 1987 AND PERSPECTIVES OF 1990 y 2,000

Years	1° a 9°	1° a 4°	5° a 9°
1986 (a)	653,532	451,006	202,526
1987 (b)	705,079	484,970	220, 109
1990 (c)	786,120	521,410	264,710
2,000(c)	1,247,500	809,700	437,800

a) Refers to real data in the initial enrolment.
b) Goals established in the Operational Plan 1987.
c) Estimations.

These goals and perspectives suppose an annual increase of 4.7%, 11 generally inferior to the sustained in 1980 to 83 and will be able to offer nine grades of basic education to the 94% of the population in scholar age.

Concerning the second objective of "eliminate illiteracy before the end of the century and develop and expand educational services for adults"; it has the firm purpose of attacking the illiteracy problem existent through a National Strategy of a National Plan of Literacy. This strategy, linking efforts

guided to training the population in scholar age the regular education, will enable, if not its total elimination, it will reduce it to an acceptable minimum that won't contradict constitutional precent in article 122: "Adults will enjoy opportunities to educate themselves and develop their abilities through training and education programs. The State will continue their educational programs to suppress illiteracy".

One of the main lines of action in the National Strategy of Literacy is knowing and characterizing the phenomena aiming to determine priorities, mechanisms, and control periods, reduction, and eradication.

In this sense, consolidation of development of regional actions of literacy and post-literacy, foreseeing mechanisms and modalities diversified of attention; likewise, the systematization and strengthening of training action in the domain of technical-methodological elements and organizational are fundamental.

In short, it is a National Strategy to give sense and coherence to regional and local strategies, born from the creativity and initiative at these levels.

Tentatively, it is foreseen the Strategy considers expanding attention to adults increasingly until 1995, starting then, as it is logical, a coverage decrease, this can be noticed in the following table, which only includes an education corresponding to the first six grades, although it is not neglected the attention on higher levels or attention offered through Subsystem of Training.

ENROLMENT OF THE PROGRAM OF EDUCATION FOR ADULTS

YEARS	TOTAL	LITERACY	POP. BASIC_ EDUC.	OTHER MODALITIES
1986 (a)	120,851	35,006	64,924	20,921
1987 (b)	150,935	49,600	76,570	24,765
1990 (c)	185, 000	70,000	80,000	35,000
2,000 (c)	100,	30,000	50,000	20,000

a) Real figures
b) Goals of the Operational Plan
c) Estimation

Sustainability of this Program is in inverse proportion of the increase in the offer of basic education and attention to children of scholar age of nine grades.

Conjugated action of the strategy of educational development in basic education, particularly in the rural area, and national strategy of literacy and Popular Education for Adults, will give as foreseeable result the reduction of the illiteracy rate between 6% and 8% for 2,000.

"Improve quality and efficiency of the Educational Systems through the realization of necessary reforms", constitutes the third objective of the Main Project of Education for Latin American and Caribbean.

In Nicaragua we cannot talk about betterment of quality and efficiency of the Educational System, without considering the new established order. Education in our country must be a "fundamental factor for the transformation and development of individual and society", therefore, education must transform not only through the reorientation of a social composition of school population, but also through the application of a Policy and Strategy of Curricular Transformation and Policy

and Strategy of Teacher Training, as well as through the systems and management mechanisms transformation, organization and planification with clear participatory character.

In these aspects, our National Constitution stipulates:

Arto. 119. "Education is an unwavering function of the State. It corresponds to plan, guide, and organize it. The National System of Education works in a unified way and according to national plans. Its organization and functions are determined by law".

It is the State's duty to educate and form in all levels and specialities the technical personnel for the country's development and transformation.

Arto. 120. "It is a core role of national teachers the creative application of plans and educational policies. Teachers have rights to living and working conditions according to their personal dignity and social function it performs. They will be promoted and estimated according to law".

To ensure the Educational System quality and efficiency, it is essential to give coherence in educational fact through the definition of all educational levels and modalities through policy application, already defined and a Strategy of Transformation and Curricular Design, guaranteeing the transformation process already initiated, establishing fundamental methodological and organizational elements, propitiating methodological unity through curricular designs adapted to nature, objectives, and characteristics of different Subsystems. This Strategy

will include, as one of its components, a diagnosis to evaluate the transformation stage currently underway; participatory research as instruments and permanent actions on the process of curricular transformation; a System of equivalences that regulate, without hindering, the transit between Subsystems.

Strategy of Transformation and Curricular Development must have as complement, a Strategy of Action for the Teaching Training, which makes feasible, in the practice, the Policy of Teaching Training, to be defined, and the own Curricular Transformation.

The Strategy of Teaching Training must be according to priorities and guidelines established by the National Educational Policy, which teacher promotes training, as centres of educational development according to national and regional demands, that promotes teachers qualification in the methodology of Nicaraguan popular education, and the different teaching methods, guaranteeing quality and efficiency in the educational teaching process, ensuring the domain of curricular development and organization techniques of programmatic contents, and promote the teacher insertion in the economic and social development of the community, as teacher and social promoter.

These Action strategies must be organized and executed through an organic structure and agile, smooth and consistent management with limitations imposing the politic, economic, and military mercenary aggression. A functional organic structure rationalizing its inner resources, ensuring efficiency and quality in the execution, considering national needs and regional and local

particularities, reducing disparities of educational attention in regions and among different population sectors and eliminates differences between Pacific and Atlantic, as well as between the and city. But it keeps the normative character of national in benefit of the executor character of the regional.

In this regard, it will be formulated a Plan of Action for Administrative Decentralization considering among other aspects, regulation and control of administrative processes in all structures of the Ministry of Education, coordination mechanisms between organisms and instances involves the educational endeavour, which guarantees basic conditions for the progressive decentralization and direction of education. In short, ensures the effective functioning of the Ministry of Education.

The formulation of these plans action of Nicaraguan education fundamental aspects, outline educational politics and conformation of a Planification Strategy, in the gaze of medium and long term, which contributes to directly support the Main Project of Education for Latin American and Caribbean, registered in the politic, economic, social, and educational project of the Sandinista Popular Revolution.

The conjugated and integral action in all these aspects will conform a new education and strengthen those aspects that have a more direct impact on the educational system efficiency and quality of education (Curricular Transformation, Teaching Training, educational management...)

The process initiated in this regard and the achieved advances in various components of educational transformation, guarantee

before the end of the century the reality of an education with efficiency levels and substantial improvements in quality.

Taken from the book "La Educación en el Marco del Proyecto principal de Educación (1980-1986)"

Managua, January 22nd 1987

poiesis &
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Poiesis & praxis

The Government of Reconciliation and National Unity (Gobierno de Reconciliación y Unidad Nacional, GRUN) has developed diverse strategies to consolidate the National Educational System, with the purpose of the educational subsystems, Ministry of Education (MINED), National Technical and Technological Institue (Instituto Nacional Técnico y Tecnológico, INATEC), Regional Autonomic Educational Subsystem (Subsistema Educativo Autonómico Regional, SEAR), and National Council of Universities (Consejo Nacional de Universidades, CNU), to work together to guarantee a quality education for the Nicaraguan population. This implies an education centered in the holistic human development of the person, family and community.

In this context, the section of POIESIS & PRAXIS presents an article in which educational practices to innovate in the classroom are described. The section starts with the investigation Application of a didactic unity for the development of critical thinking in high school students by Anielka del Carmen Miranda Rivera. The author highlights the need to implement didactic strategies which contribute to the process of construction of knowledge of high school students.

Subsequently, two writers' approach in their artistic works the meaning of the Sandinista Popular Revolution in the transformation and evolution that has experimented the education in the Nicaraguan territory, regarding the access to education in historically ignored zones. On one hand, Marvin Salvador Calero Molina shared five poems, four allusive to education in the countryside and one related with the imprint a teacher leaves in their student's life. The section closes with two poems from Junior Alberto Pérez, who invites us to understand the insurrection as an event that set a milestone in our country and achieved profound changes in the educational field, which entailed the decrease of social and economic inequalities in Nicaragua.

Application of a didactic unity for the development of critical thinking in high school students

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Aplicación de una unidad didáctica para el desarrollo del
pensamiento crítico en estudiante de secundaria

Abstract

This paper is the product of a didactic intervention, carried out with the purpose of applying innovative strategies focused on the development of critical thinking in students, in the discipline of Economics in High School, through educational and practical didactic sessions. The methodology used was action-research, since the work was carried out immersed in the process, not as an observer agent but as a transforming agent, intertwining research practice with educational action. The mixed approach was applied because during the research, quantitative data were generated but with qualitative predominance, because the entire process carried out had to be supported with relevant information found during the research. The techniques implemented were observation and focus group. The sample for this research was 15 students of 10th grade A of the Tania la Guerrillera School, selected by an intentional non-probabilistic sampling. This research was carried out through a didactic intervention with innovative learning strategies to generate critical thinking in students, there were 8 didactic sessions in total. As a result, it was possible to know the incidence of the strategies applied and the significant learning that students built, and the new positions students have with respect to the subject Economics.

The degree of importance that the use and implementation of didactic strategies had at the time of teaching a class was determined, the variation of them during the class sessions favors the achievement of the objectives and quality learning by the students. Likewise, the appropriate selection of strategies according to the area to be strengthened in students will allow optimizing time and obtaining better results in terms of the learning achieved by them.

Keywords: didactic strategies, critical thinking, action-research.

Resumen

El artículo es producto de una intervención didáctica realizada con el propósito de aplicar estrategias innovadoras enfocadas en el desarrollo del pensamiento crítico en los estudiantes, en la asignatura Economía en educación secundaria, mediante sesiones didácticas educativas y prácticas. La metodología empleada fue la investigación-acción, puesto que el trabajo se realizó de forma inmersa en el proceso, no como agente observador, sino como agente transformador entrelazando la práctica investigativa a la acción educativa. Se aplicó el enfoque mixto, mediante la generación de datos cuantitativos con predominancia cualitativa, debido a que todo el proceso realizado se debió sustentar con información relevante encontrada durante la investigación. Las técnicas implementadas fueron la observación y el grupo focal. La muestra para esta investigación fue de 15 estudiantes de décimo grado "A" del Colegio Tania, la Guerrillera. Estos fueron seleccionados mediante un muestreo no probabilístico intencional. La investigación se desarrolló a través de una intervención didáctica con estrategias de aprendizaje innovadoras para generar pensamiento crítico en los estudiantes, en total se realizaron ocho sesiones didácticas. Como resultado, se logró conocer la incidencia de las estrategias aplicadas y el aprendizaje significativo que construyeron los estudiantes, así como los nuevos posicionamientos que el estudiantado tiene respecto a la asignatura de Economía. Se determinó el grado de importancia que tiene el uso e implementación de estrategias didácticas al momento de impartir una clase, puesto que la variación de estas durante las sesiones favorece el alcance de los objetivos y un aprendizaje de calidad por parte de los estudiantes. Asimismo, la selección adecuada de las estrategias correspondientes con el área que se desea fortalecer en los estudiantes permitió optimizar el tiempo y mejores resultados en cuanto al aprendizaje alcanzado.

Palabras clave: *estrategias didácticas, pensamiento crítico, investigación-acción.*

Introduction

Even when a variety of educative approaches currently exists, from teaching Social Sciences, bets are on the constructivist model, centered in the students' learning through practical classes, where the teacher is a mediator of the process, and the protagonist is the student. Ortiz Granja (2015) expresses this process as a dialectic exchange between the knowledge of the teacher and students, coming into discussion, opposition, and dialogue leading to a fruitful and meaningful synthesis (p. 97). This model is refined when both, teacher and student, engage between themselves to create new knowledge through a harmonious process, without automating the educational processes, rather facilitating a dynamic space where students are not seen as objects, but as capable subjects, able to argue perspectives.

Similarly, Schunk (2012) states cognoscitive theories stress the acquisition of knowledge and abilities, the creation of mental structures and information processing (p. 22). Namely, to develop these mental abilities we must allow the student to construct and deconstruct, practice and experience what they learned, teach the mistake is part of learning; an active student will be an active professional capable of excelling in different situations. Teachers are responsible, through constructivist learning, of aiding the creation of new mental structures, leading students to broaden up their cognitive abilities.

Hence, with the goal of applying didactic strategies to promote the development of the critical thinking in students through innovative educational practices, a didactic intervention was performed, allowing the creation of educative spaces, set up in the application of strategies, whereby students can display their abilities to argue, analyze, and evaluate the consistency of information on the process of teaching-learning. Aiming this, an inquiry process of students' previous knowledge was led; then, eight class sessions with prior created strategies were applied to enhance the ability of analysis and interpretation of information in students, plus the judgement to apply it. Lastly, the impact of the didactic intervention and if it allowed the development of critical thinking by students was determined.

All this process arises in reply to the need to promote the application of didactic strategies in the subject of Economy and guides the development of students' critical thinking. Didactic strategies are all those the teacher applies during class, earlier designed for students to be able to comprehend with greater ease the study topics.

Regarding this, Velazco and Mosquera (2010) suggest the concept of didact strategy is entangled with the selection of activities and pedagogical practice in different educative moments, methods and resources in the processes of teaching-learning (p. 1). Thereby, before applying a didactic strategy, the goal to be achieved must be clear and, likewise, do an analysis based on the educational need to be solved.

However, it is usual when, in teacher practices, prevails the technicist model, defined by flat classes, little use of the textbook and other didactic resources,

extensive question guides; memory processes do not generate new knowledge and much less development of students' reading comprehension three dimensions, as memorization seizes a central place. Rather, the constructivist view leads to apply strategies to enable the student to judge and analyze what was read, formulate hypotheses, argue, emit a judgement, and not be a passive reader.

The implementation of innovative didactic strategies centered on the development of critical thinking allows students to grow a better comprehension and greater mastery of subjects. It is essential for students to egress from the educative system with skills needed to assertively make decisions, consequently, to shift from the technicist model to the constructivist is very appropriate in the processes of continuous teacher training.

Therefore, this didactic intervention was based on the application of strategies to allow students to execute critical thinking and grasp the contents of Economy's subject through practical activities, promoting students' interest in class. Once the intervention period was done, a results analysis was led, demonstrating the intervention of didactical strategies in educational sessions creates better learning results in students.

The investigation is supported by different studies nationally and internationally. Among them the thesis titled *Didactical strategies to develop critical thinking in students of initial level of an educational institution of the Puente Piedra district, Lima* (Asencios, 2022, p. 13), *Didactic intervention with Innovative Learning Strategies in the discipline of History to*

Develop Critical Thinking through the Content of the First and Second World War in students of 8th grade "A" of the Sendero de luz School Center of the municipality of Ciudad Sandino, department of Managua during the II semester 2016 (Marenco, et al. 2017, p. 12) and *Didactic intervention to develop critical thinking in the subject of Philosophy in students of 11th grade of the Institute Monseñor Rafael Ángel Reyes of the municipality of Diriomo, Granada* (Hernández & Delgado, 2017. p. 5).

These investigations focus on generating students' critical thinking in the learning of Social Sciences on the Economy's subject through the execution of innovative didactical strategies, new learning activities, use of didactic resources and implementation of a competency-based approach, under a socio-critical paradigm so the student body takes the learning with sense, significance, and utility in their daily life. Precisely through this didactical experience, the research arises; as a didactical experience systematization in Secondary Education, it pretends to spread innovative experiences in Social Sciences and, concurrently, pose challenges and obstacles to the professorship in the permanent task of carrying out innovative experiences in the classroom.

Materials and methods

The investigation was led through a didactical intervention applied at Tania la Guerrillera Public School located in the municipality of Villa El Carmen, territory of Managua, on the II semester of 2022. This mediation was executed in eight didactic sessions in the discipline of Economy with tenth grade "A" students on secondary education.

The research applies the socio-critical paradigm. Alvarado and García (2008) state "the socio-critical paradigm is founded on social critique with a marked self-reflexive character, considering knowledge is always built by interests based on the groups' needs" (p. 190). The gathered data is supported in the compilation of quantitative and qualitative data, in a concatenated through the analysis and inference of statistic data, graphics, application of pre-test and post-test; therefore, the applied approach was mixed approach, a blend of the qualitative and quantitative approach. It consists of the union of qualitative and quantitative in research compiling specific traits of each one. This clarifies the denominated mixed approach. Hernández, et al. (cited by Pereira Pérez, 2011) convey mixed approach represents the highest grade of integration between qualitative and quantitative. Both are intermingled or combined during all the process of research, at least, in most of their stages (...) it adds complexity to the study's design; but ponders all advantages of each approach (p. 17).

The methodology applied is the action-research, Latorre (2003) (cited by Estrella and Centeno, 2019) raises it is used to depict a family of activities carried out by teachers in their classrooms with goals such as curricular development, self-development, improvement of educational programs (p. 29). Similarly, instruments were used as question guides and field journals from different points of view; students, teachers, investigators and external observers. It allowed us to compile accurate insight of the evolution of didactical education, as well as checklists of self and hetero evaluation.

Between the applied techniques are found observation and focus groups.

The total population was 153 students in high school at Tania la Guerrillera Public School, located in the municipality of Villa el Carmen, territory of Managua, during the II semester of 2022. According to Alvarado (2003), population means the collective universe or totality elements of what is being investigated or studied (p. 23). Though, main agents in the research had to comply with a non-probability criteria or intentional sampling was applied. Hernández, et al. (2014) stated non-probability samples, also titled directed samples, are not dependent on probability but related causes with research's characteristics or investigator's purposes (p. 176). Therefore, the selected sample was 15 students of tenth grade.

Result and discussion

A didactic intervention was applied. It was divided into eight sessions where innovative didactic strategies were executed to initiate students' critical thinking on Economy. It is noteworthy all the didactic sessions study guides and reading materials were created, given to each student before classes.

On the *first didactic session*, students' prior knowledge was identified through a diagnostic test S.Q.A "What I Know, what I Want to know, what I Learned" (Lo que Sé, lo que Quiero saber, lo que Aprendí) consisting in each student answering in their own words, aspects or topics to study in class, this had rows alluding to "what I Know" and "what I Want to know" to be completed. At this point, students showed

Figure 1

Students solving diagnostic test S.Q.A

difficulty as topics to study were unknown to them, most didn't complete the information and delivered evaluations blankly. With the instrument's application, only 13% of students had mastery of the topics.

In the *second didactic session*, they worked on *Free trade agreements* through a guided reading. A fish graphic organizer was created, and students exchanged ideas in class. At the end, they exposed their graphic organizers, evaluated through a checklist.

The *third session* was based on the bingo game. Groups were organized and each given a passbook with questions and cards to complete the bingo. This game was based on the previous session's topic and students had to answer the questions coming out of the bingo box until completing all questions of their passbook cards. The above granted the integration and attention of all students in class. To conclude, questions and answers manifested by students during the game were mingled.

In the *fourth didactic session,* the Kahoot Test was carried out. In it, the topic of

Advantages and disadvantages of the T.L.C. was studied. This class took place in the T.I.C. classroom. Students answered some questions through selecting options and, in turn, had to comply with the time established to reply. It was a striking and motivational strategy for students. It is vital to mention the strategy produced a positive effect and allowed everyone's integration.

In the *fifth didactic session,* the topic was *System of Central American Integration*, done through a lecture and document analysis, and choice of main ideas for the creation of infographics, using illustrative drawings and key information related to the topic. To finish, students made a presentation and chatted about their products. All students were part of the activities; a self-evaluation checklist was applied, solved individually by students.

During the *sixth session*, a tombola of questions was executed. Each student would turn the tombola and take a question related to topics studied in class. Likewise, questions were written

Figure 2

Students creating a fish-type graphic organizer

with the intention of promoting students' critical thinking and inference. In some cases, there were prizes, motivating students to engage, each question was answered by protagonist and socialized within the group.

Figure 3
Students playing Bingo

In *session seven* a mock SICA summit was performed. Through this strategy, students would take government head roles and solve a problem of broad nature. A problem was raised, and seven heads of government were chosen to be each country's representatives at the SICA summit: two secretaries, a moderator, and two assistants. Motivation in students was evident as they owned the character and offered key solutions to problems. It was in this strategy that critical thinking in students grew, as they no longer acted as passive students, rather as agents capable of creating essential changes to society. This process was evaluated through a hetero evaluation checklist.

The final evaluation took place in the eight didactic sessions. Students completed the column corresponding to "what I Learned" of the S.Q.A., showing 87 % acquired knowledge related to study topics, they also explained and related it with their context. We can affirm the didactic intervention influenced the student's critical thinking development. The strategies enforcement allowed them to raise their arguments and outlooks. Similarly, it was clear at the intervention process the students' motivation and interest in the educational process.

A focus group was applied to assess the influence of the didactic intervention from the students' perspective. As an instrument, a question guide was employed to collect data from the validated intervention.

It is salient, according to the data documented through the focus group, how students expressed the strategies generated competitiveness and progress of critical analytical and self-critical skills. They also manifested how the use of strategies and dynamics by teachers allows them to easily understand topics; thus, classes are more fun and motivational, and do not

Figure 4
Use of Tombola as a didactic resource

Figure 5
International Summit Simulation

generate a technical educational process environment.

An analysis and contrast on both tests applied to student (pre and post-test) through which it was evidenced the positive impact of the didactic intervention, considering relevant data in terms of students' prior knowledge regarding the subject of free trade agreements. Only 13% of students knew what it was and 82% were completely unaware. Nevertheless, through the didactic intervention, 87% of students appropriated the new knowledge. Hence, we can state the didactic intervention had a meaningful impact on students, as it allowed them to not perceive themselves as passive subjects, rather than actives during didactical sequences.

Evaluation of the didactical intervention

The data presented in the previous section presents clear evidence (quantitative and qualitative) of the didactical intervention's influence in terms of results obtained exhibiting a wide margin for growth regarding the students' acquired knowledge, as well as the development of critical thinking, analysis and inference on the topics. The applied strategies allowed

to establish a starting point in terms of previous students' constructs, rather follow a sequential order with topics, and a final assessment of the didactical intervention's process effect.

According with the triangulation of field diaries generally aims at the following aspects as most relevant:

→ Implemented strategies were eye-catching for students.

→ Students showed themselves active, participative, interested, and motivated.

→ Classes were hands-on, allowing students to grow their critical and self-critical abilities.

→ Students were able to extrapolate their ideas and relate study topics to their reality.

→ Clarification of student's doubt was achieved.

Conclusions

The intervention process carried out at Tania la Guerrillera Public School enabled assess to the influence of innovative strategies for students' critical thinking development through the topic of Free Trade Agreement and Central American Integration System (Sistema de Integración Centroamericano, SICA). Results of the intervention, it was concluded:

Students' prior knowledge regarding T.L.C. and SICSA was identified. Using an innovative diagnostic test (S.Q.A.), 80% of students were completely unaware of topics related to T.L.C. and 87% could

not answer the question about SICA. This allowed us to mark a starting point of the new knowledge building and choose adequate methods and teaching techniques for the introduction of it.

A Didactic Intervention was successfully carried out at Tania la Guerrillera Public School with Innovative Didactical Strategies, aiming for the development of students' critical thinking, as the creation of a fish graphic organizer, bingo, Kahoot, infographics, tombola and the summit; allowing students' analysis and reflection of the content, evidenced on the participation and motivation of students.

The implementation of Innovative didactical strategies in the teaching of Economy generated students' critical thinking, boosted by the participation and construction of new mental structures, enabled the development of students' competitive abilities.

The application of the constructivist theory in the didactical intervention' sessions was a key element, facilitating students' innovation and critical thinking. They created their own ideas and arguments on the topic, as they are the protagonists of their learning, and the teacher is only a process mediator.

If didactical strategies are gradually applied when carrying out class sessions, results in the students' learning will be satisfactory.

The students' perspective was known due to the triangulation of field diaries which allowed to comprehend the influence of the applied strategies to the extent it was possible to get more than 80% of students' knowledge of contents.

Research shows teachers, students and future students the value of the strategies used to focus on students'

Figure 6

Comparison of the pretest and post-test
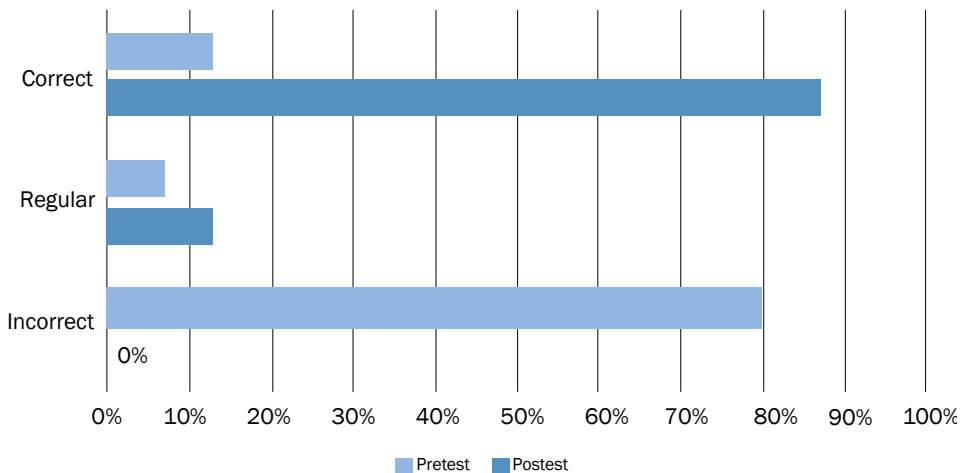
Own Work

critical thinking development during the educational processes. To teachers, new appliable and adaptable strategies to their disciplines were facilitated, while it aroused students' interest, classes were more practical, and the class frequency was taken advantage of.

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Poem about the mountain and its inhabitants

The teacher investigates, learns, teaches
and teaches his classes,
then everyone believes history ends here,
between the walls of anonymity,
teachings, and maybe,
one or two occasional visits
to the pastures,
to palpate the cows after milking,
to visit the vegetable garden,
to interpret the chemical language of the trees,
to investigate the secret of the mountain.

Students travel kilometers on the horses' back
let's say a four-legged friend
that understands the mountain
and is scared easily when
the velvet slips between the undergrowth,
let's say ecological equilibrium

Students come to the university in the countryside
where they stay forever
and it's there, that the mountain and its inhabitants
share its wisdom with the master.

Marvin Salvador Calero Molina

The context of education in the countryside

The student strives
to find the context
between technology, countryside,
and education.
Walks to the highest hill
and searches for the internet signal
far, far away
with their device.
The student's name is
Gerardo, Roberto, Jeffer,
Maluz, Amparo, Antonela,
Grethel, they're name in every
way. And learns.

Comes down the hill and comes back
at the foot of the mountain
where their house is, their vegetables,
and their dreams. The mother is joyful

Marvin Salvador Calero Molina

Family and community in education

When his son who herded the boss's cows
has the opportunity of going to university, close by, right there in
the county.
In the future he will herd his own cows, and will start to be his
own boss.

The community is joyful when all the mothers are
while they watch their kids dream big and thrive.

Then Nicaragua is joyful when the community is joyful
because all the mothers are joyful
because their children can dream with herding their own cows,
start and be their own bosses.

Marvin Salvador Calero Molina

To the teachers who go to the Countryside

At the distance of some hours on horseback,
of some hours on public transportation,
of some minutes on foot, it's the home,
where there are also the kids
and the wife or the husband
and the funny aunt
and the grandma who doesn't know if when they come back
will be there with her coffee and her rosquillas
for breakfast.

There in the University on the Countryside;
there are nights when dawn breaks
sheltered by the mountain,
on the other side of the flooding of the river
or at the foot of the cow mooing during milking.

There in the mountain,
where humble people live
is where the homeland needs the teachers

Marvin Salvador Calero Molina

One day we'll leave and some of our essence will stay

Yes, I have thought about it many times,
 What will happen when we go?
When is time to go home?

I will comprehend I taught something
that perhaps seems too little or too complex:

if the Pythagoras theorem
did any good to my students,
if they got to differentiate the eucaryotic
cells from the procaryotic ones,
if they applied for their entrepreneurships
the CANVAS model,
if the advice helped them in the labor market,
if they are better citizens,
better children,
or better parents.

I will comprehend I taught something
if my students refer with courtesy
to that rural teacher,
the one who prepared them coffee on the rainy day
and worked beside them under the sun.

We will go away sad! when we say farewell.

Maybe a little with the heart older and more broken
that, when we came to the county,
surely something ours
will remain,
a detail,
a knowledge,
an anecdote,
a smile

What about this brief poem as a token of appreciation?

Marvin Salvador Calero Molina

The Revolution

The revolution is the bread on the table
The kids on the school
Is the soil and the farmer that works it
Is the green of the field and the blue of the sky
Is a street all full of people
A pint of Pinol
The worker and the artisan
The Revolution are the public universities
The free health and education,
The snacks in schools,
Is to working hard to avoid another night to fall
Is the future filled of hopes
And the worst headache of the wealthy.

Junior Alberto Pérez

Revolution II

To do the revolution is precise that we understand
that we understand that the revolution is a given
that the empires fall and that is sure and possible
that everyone one day eats and lives with dignity
will be like understanding the things we ignore
the love, the solidarity.
We will also understand that a poem is not a bread
        Neither a table
         neither a chair
          neither a house
           neither a bomb
and that they do not change the world.
We will understand that the poem is a tool
            and the poet a worker and
a day not so far away, the carpenter will no longer build
the perfect chair where the little priest
                    the little bourgeois
The carpenter, the cabinetmaker, the blacksmith, the shoemaker
will be most serious professions
and the poet will go after the workers and
at the end will understand in a joyful and terrible way
that everything would be better if things changed
if it wasn't neutral, solemn, and frivolous
-and I say this with all due respect-
because the men can only be men
and strictly it can't be a man or a poet
when they cross their arms and interrogates the void
while arrogance and contempt cover their skin.
It is precise to shoot words —capital, private property—
the world would be satisfied with the truth and justice
to be a different world

Junior Alberto Pérez

editorial standards

Rules for the submission scientific essays and articles

→ Essays or scientific articles must be original and unreleased.

→ The works must be sent to the email address: revista.indice@cnu.edu.ni in Word format or another text processor compatible with Windows.

→ Must be presented in Times New Roman, size of letter 12, with space of 1.5 and alignment in justified.

→ The extension must not exceed 20 pages, including references, illustrations, maps and tables.

→ In a separate archive it must be included a CV of the author/authors, indicating their institutional affiliation, position held, postal address, email address, and ORCID code.

→ All pages must be numbered in the right superior side, including the first page.

→ Every essay must contain a title, abstract (English and Spanish), keywords (English and Spanish), introduction, development, conclusion, references.

→ The scientific article must include, also, a section about the applied methodology. The firt page must contain:

  • Complete title that does not exceed 14 words, centered, black, with the first letter in Capital letter and the rest in lower case.

  Name of the authors.

  • Abstract or resumé with a maximum extension of 300 words, preceded by

the word Abstract, that must also be included. This must also be inserted in Spanish (Resumen).

In general, the texts must contain the following:

→ Essays: a) motivation, b) proposition or idea that must be tested, c) main results and d) main conclusions.

→ Scientific article: a) advances or results of an investigation b) purpose: establish the objectives of the investigation (even if these could be deduced from the title or another part of the abstract); c) methodology: broadly describe the techniques or proceedings used during the investigation; d) description of the sources and ways of use; f) main results of the investigation; g) implications of the results (in particular, how these are related with the purpose of investigation).

In both cases (essays and articles), it must be included a maximum of five keywords, in English and Spanish.

- **Structure of the scientific essay:**

→ Title: Presented in a clear, concise, and pertinent manner.

→ Abstract: Properly address the parts that constitute the manuscript (250-300 words).

→ Keywords: Contain information of the content of the text. Are inside a globally used thesaurus. They are presented in a minimum of three and a maximum of five.

→ Resumen: Translation to Spanish to the content of the abstract.

→ *Palabras clave:* Translation of the keywords of the document.

→ Introduction: Presents in a concrete and clear manner the necessary information about the contributions provided by the work. Likewise, defines the problems to address together with the results.

→ Development: The developed sections are correlated with the objectives and thesis described in the introduction. The topic, aside from being exposed, must be analyzed with theoretical and methodological support. Likewise, ideas are raised with arguments that support reliable resources, in correspondence with topics that are described in the introduction.

→ Conclusions: Describes the contributions made, through the own arguments of the authors, and in correspondence with the raised objectives.

→ References: All citations on the text must be found in this section. Presents at least ten references, updated and with recognized sources.

• **Structure of the scientific article:**

→ Title: Is presented in a clear, concise, and pertinent manner.

→ Abstract: Properly address the parts that constitute the manuscript (250-300 words).

→ Keywords: Contain information of the content of the text. Are inside a globally used thesaurus. They are presented in a minimum of three and a maximum of five.

→ Resumen: Translation to Spanish to the content of the abstract.

→ *Palabras clave:* Translation of the keywords of the document.

→ Introduction: Presents in a concrete and clear manner the necessary information about the contributions provided by the work. Likewise, defines the problems to address together with the results.

→ Materials and methods: This section must include in a clear manner the applied type of investigation, the participants of the study, instruments, proceedings of collection of data and their analysis. Likewise, we must answer the set objectives.

→ Results and discussion: Develops arguments in a logical and coherent manner. The objectives, hypotheses/thesis raised are correlated. Contains a triangulation of the objectives, methodology, quantitative and/or qualitative methods.

→ Conclusionss: Describes the contributions made, through the own arguments of the authors and in correspondence with the raised objectives.

→ References: All citations on the text must be found in this section. Presents at least ten references, updated and with recognized sources.

• **Other aspects to consider:**

→ Titles and subtitles must be presented without numeration, or letters, or

underlines.

→ Tables, figures, photos and other illustrative images must be numbered and referred to on the text. They are not incorporated on the text but be sent in separate archives.

→ The original photos, drawings, figures, tables, graphics, etc., must be presented numbered consecutively with Indo-Arabic numbers (Figure 1, Figure 2). They must indicate the name of the author and the number of illustrations and include their respective legend or caption of the photo in which the source is consigned.

→ Photographs and images must be presented in JPG achieve with a resolution no lower than 300 DPI/PPI. Must be delivered in a USB device or sent to the email address.

→ Authors must indicate the place where they will place illustrations inside the body of the text.

→ Tables must not be elaborated with tabulations, or with space bar. Must use the function of Insert table of Word.

→ The citations must be integrated on the essay or scientific article, between parentheses, referring to the author, year and page (Pérez, 1998, p. 18). Must integrate the used literature. This must be found at the end of the essay as References, following the alphabetical oder of the cited authors.

→ Captions must be used only when primary sources are cited, or special circumstances merit clarification.

→ The references must follow the Style Manual of publications by the American Psychological Association (APA), version 7.

Example:

Reference of book: Last name, N. (year). Title of the book (Edition). Editorial. URL.
Example:
Pérez, J. (1993). Obras históricas completas. Fondo de Promoción Cultural BANICWagner, P., Weiss, C.,

Electronic version:

Last name, N. (year). Title of the book. Editorial (if applicable). DOI or URL

Example:

> Guevara, C. (2021). Nicaragua y su historia reciente. Aldila editorial. https:// doi. vorg/1056797490

Reference of journalistic publications: 1) article of journal, 2) newspaper article

1) Article of journal:

> Apellido, N. (año). Título del artículo. Nombre de la revista, volumen (número de edición), página(s).

Example:

> Aguirre Salinas, C. (2022). Investigación e innovación educativa: estrategia vinculante entre los sectores educativos y productivos en Nicaragua. Índice, Revista de Educación de Nicaragua (3), 43–62.

2) Article of online journal:

> Last name, N. (year). Title of the article. Name of the journal, volume (edition number), page(s). https://www...

Example:

> Aráuz, M. (2021). La coma criminal. Revista Santander, 3(54), 124–165. https:// doi.org/10.19052/ruls.vol1.iss80.16

3) Newspaper article:

> Last name, N. (year, day month). Article title. Newspaper name, page(s) without abbreviations.

Example:

> Dávila, B. (2021, 26 de octubre). La nueva Nicaragua. El 19digital, 13–15.

4) Online newspaper article:

> Last name, N. (year, month day). Article title. Name of the newspaper. http://...

Example:

> Dávila, B. (2021, 26 de octubre). La nueva Nicaragua. El 19digital. https:// www. elespectador.com/opinion/la-capucha-columna-904714

Reference to musical works: Last name or name of the group. (year of release). Title of the song. Album title. [Medium of recording: compact disc, cassette, etc.]. Record label.

Example:

Vargas/The Beatles (1944). La Mora Limpia. Nicaragua bella. [CD]. Atlantic music

References to audiovisual media: Internet videos (YouTube, Vimeo, Dailymotion, etc.): Last name, N. [Username]. (Year, month, day). Title of the video [Video archive]. Location platform. URL.

Example:

Alanís, R. [Constelación]. (2021, 26 de octubre). El Renacimiento: La época de Miguel Ángel y Leonardo da Vinci [Archivo de vídeo]. YouTube. https:// www. youtube.com/watch?v=voaH_J9VB5K

Blog references. Last name, N. (year, month, day). Title of the message [Form description]. Website name. URL.

Example:

Duarte, A. (2021, 27 de octubre). La majestuosidad del Xolotlán [Mensaje en un blog]. El zenzontle. http://www.biblogtecarios.es/felicampal/la-biblioteca-quequieres-sera-la-biblioteca-quequieras

Differences between Bibliography and Reference

References include all cited sources on the work. On the other hand, bibliography accepts sources that allow the foundation of the topic but weren't cited on the document's body. According to the APA Style, it is expected that all authors incorporated on the section of References to be found on the work.

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Doctor in Education and Master of University Administration. Specialist in Virtual Environments of Learning and Self-evaluation of Degrees. Postgraduate in Innovative Methods in Self-evaluation. Bachelor in Educative Administration and bachelor in Education Sciences with Mention in Physics. Has 36 years of experience at university teaching and 25 years in evaluation and accreditation as vice-president of Central American Council of Accreditation (CCA by its Spanish acronym) and of the Central American Agency of Postgraduate (CNEA) in representation of Nicaragua.

She has led processes of curricular transformation and innovation at universities. Has been coordinator of the technical team of the Project Framework of Qualification of Higher Education for Central America (MCESCA 2014-2017 by its Spanish acronym) in representation of the CNU. Has published articles and studies about higher education and evaluation. Likewise, has directed thesis of Doctorate and Master of Education. Currently, she is the president of the National Council of Evaluation and Accreditation (CNEA by its Spanish acronym) and member of the Executive Committee of RIACES.

Pichardo, Marcos Antonio

Food engineer. Specialist Technician in Teaching of Technical Education and Vocational Training for the National Technical and Technological Institute (INATEC). Teacher with more than seven years of experience. He specialized in the improvement of didactic strategies of technical and higher education. Was responsible for the Department of Continuous Training to Teachers of INATEC. Currently, he is responsible for the Section of INATEC'S Curricular Design.

Flores Pacheco, Juan Asdrúbal

Master in Investigation (2014-2015) in the Specialty of Conservation and Sustainable Use of Forestry Systems of the University Institute of Investigation and Sustainable Forestry Management (iuFOR) of the Universidad de Valladolid (UVa), Spain. Master of Environment and Natual Resources with specialty in Hydrographic Basins for the Universidad Autónoma de Barcelona (UAB), Spain (2011-2013). Postgraduate in Methods and Techniques of Scientific Investigation for the Bluefields Indian & Caribbean University (BICU), Nicaragua (2013). Currently, he is a candidate for Doctor in Management and Quality of Education by the university of Universidad Nacional Autónoma de Nicaragua, Managua (UNAN-Managua). He is a teacher investigator at the BICU.

Galarza López, Judith

Doctor in Medicine; specialist of Second Grade in Integral General Medicine. Doctor in Education Sciences. Master of Sciences of Higher Education (University Management Mention). Associate Professor of the Universidad de La Habana. Currently, is Coordinator of the degree of Medicine of the Universidad San Gregorio de Portoviejo, Ecuador. Was professor of various subjects of the Masters of Sciences of the Higher Education of the CEPES. Has directed diverse courses and workshops in Cuba and the exterior (Ecuador, Perú, México, Bolivia, Uruguay, Argentina, Honduras, and El Salvador) about topics related with university management. Likewise, has published books, monographies and articles about university topics in national and international journals; has obtained various national prizes and recognitions for scientific work, granted by the Universidad de La Habana, the Ministry of Higher Education and the Academy of Sciences of Cuba. Was member of the Doctoral Committee and Scientific Council of CEPES. Is, from its foundation in 2009, Academic Secretary of the Web of Strategic Direction in Higher Education (RED-REES).

King Sing Miranda, Rigoberto Alejandro

Bachelor in Psychology. Has more than fifteen years of experience in topics of gender, disability, and coordination of social projects. Specialist of Vocational Training in attention to the indicator of Strategies of the National Technical and Technological Institute (INATEC) "Attention to people with diverse disabilities". Has presented talks and conferences on a national level. Currently working as a teacher at INATEC.

Maldonado, Carlos Eduardo

Doctor in Phylosophy by the KU Lueven (Belgium), Posdoctorate as Visiting Scholar in the University of of Pittsburgh (U.S.); Post doctorate as Visiting Research Professor in the Catholic University of America

(Washington, D.C.), Academic Visitor, Faculty of Medicine, University El Bosque. Doctor Honoris Causa, Universidad de Timisoara (Rumania), 2015. Doctor Honoris Causa, granted by the Universidad Nacional del Altiplano (Puno, Perú, 2019). Doctor Honoris Causa by the Colegio de Morelos (México), 2022. The CEDES of the Universidad Autónoma del Estado de México (UAEM) in the framework of the Doctorate in Sustainability creates the Chair of "Carlos Eduardo Maldonado" in Complexity and Sustainability (2019). The Colegio de Morelos, México, decides that the Center of Investigations and Academy of Complexity will take the name of "Carlos Eduardo Maldonado"; 2020. The Colegio de Morelos creates the Chair in Complexity Carlos Eduardo Maldonado, 2021.

Mena Amador, Lisseth Amparo

Master in Education and Pedagogical Mediation. With more than 40 years of experience in accompaniment, studies, facilitation, and application of policies, strategies and programs based on approaches to individual and collective human rights of the indigenous villages, especially in the fields of education, intercultural health and training of academic centers and specialized programs in cultural diversity. Has dedicated the last decades to promote paradigmatic changes in the relations of international cooperation and philanthropy with indigenous villages, participating in the formulation, follow-up, application and monitoring of proposes and establishment of initiatives led by indigenous people to guide technical and financial resources directly to indigenous organization.

Miranda Rivera, Anielka del Carmen

Normalist teacher by the Escuela Normal Alessio Blandón, student of the degree of Social Sciences in the Universidad Nacional Autónoma de Nicaragua, Managua (UNAN-Managua). Has done diverse courses in the National Technical and Technological Institute (INATEC).

Narváez, Hebler Mauricio

Master in Education and Pedagogical Mediation and in Rural Development. Has diplomates in Permaculture, Climatic Change and Disaster Risk, as well as specialties in organic agriculture, interdisciplinary investigation, social systematization and educational programs. With more than 20 years of professional experience, he has worked in Guatemala and Honduras in projects of food safety and nutrition in organic coffee plantations. Also, has been teacher and investigator in the now extinct Universidad Centroamericana UCA (currently Casimiro Sotelo Montenegro) and responsible for the Center of Investigation and Extension in Rural Development (ICIDRI-Masatepe) of the Universidad Nacional Politécnia. Has published academic essays, books about agroecology and literary works, among them the novel "Perfubalaciones en el café Plombier". Nowadys, he is responsible for the Unity of Management of Quality and is a techer at the Universidad Internacional Antonio de Valdivieso (INAV).

Navarrete Rivas, María Lilliam

Student of the Doctorate in Management and Quality of the Scientific Investigation developed by the UNAN-Managua; Master of Strategic Direction in Technologies of

Information; Bachelor in Sciences of the Education with mention in Educational Informatics. Continuous education online, processes of innovation and entrepreneurship, investigation, creation of accessible audiovisual materials, creation of accessible courses and basic certification in Microsoft Office. Has been responsible for graduate and postgraduate degrees and has made contributions to the quality of education. Currently is working as responsible of the Department of Curricular Follow-up and Evaluation of the General Direction of Curricular Development of the National Council of Universities (CNU).

Ortega Rocha, Ramón Ángel

Master in Management and Public Policies (Universidad de Chile); postgraduate in Economy and Finance (Universidad Centroamericana); Bachelor in Economy in the Unviersidad Nacional Autónoma de Nicaragua (UNAN-Managua). Currently works as the Director of the Division of Educational Statistics of the Ministry of Education. Has been part of the Calculation of Gross Domestic Product in the Management of National Accounts of the BCN (Central Bank of Nicaragua), Chair of undergraduate in the Bachelor of Economy and postgraduate in the Master of Applied Economy in the Universidad Centroamericana and Master of Management of Projects of the Universidad Nacional de Ingeniería.

Orozco Hernández, Sonia María

Doctor in Education and Social Intervention; Master of Education and Social Intervention, Universidad Nacional Autónoma de Nicaragua, Managua. Specialist in

Investigation (Universidad San Carlos de Guatemala and Universidad Católica Agropecuaria del Trópico Seco, Nicaragua). Specialist in Self-evaluation of Degrees, Pontificia Universidad Católica del Perú. Postgraduate in Innovative Methods for the University Self-evaluation, Universidad Nacional Autónoma de Nicaragua, León and Universidad Nacional Agraria. Bachelor in Education and Agricultural Extension, Universidad Nacional Agraria, Nicaragua. Teacher with 34 years of experience on a technical and higher level. Investigator in topics related with quality management in education. Has published articles and essays related to the topic in books, lectures, and scientific congresses. With national and international experience in processes of evaluation, self-evaluation and institutional accreditation and of programs focused on the continuous improvement of quality.

Palmer Marley, Caroline Maxine

Doctor in Education with emphasis on Pedagogical Mediation. Master Pedagogy with mention at University Teaching (UNAN-Managua); Bachelor in Public Accounting and Finances, Bluefields Indian & Caribbean University (BICU). Has more than 10 years of experience in administration. Currently works as a teacher at BICU.

Petrie Bejarano, Henry Alexander

Writer, editor and essayist. Systemiser of processes and sociocultural investigator. Author of more than 25 published books, on the genres of poetry, narrative, dramatic, sociohistorical and cultural, among others, highlighting: Jóvenes de Nicaragua: una historia que contar [Youth of Nicaragua: a history to tell] (two editions, 1993 and 2020),

Fritongo Morongo (two editions, 2007 and 2016) and Juventud Crítica (2019). Is a cultural manager with more than 23 years of experience; creator of methodologies for the promotion of comprehensive reading and creative writing, and Director of the website Tinaja Intercultural. His articles have been published in diverse national

Pérez Calero, Junior Alberto

Bachelor in Sciences of Education with mention in Hispanic Language and Literature, graduated in the Multidisciplinary Regional Faculty of Chontales (FAREM-Chontales) of the UNAN-Managua. Teacher of Elementary Education with mention in Multigrade Education, graduated in the Escuela Regional Gregorio Aguilar Barea. He is an investigator, poet, writer, and essayist. Currently working as Municipal Pedagogical Advisor, Ministry of Education, Morrito, Río San Juan. Teacher of the Bachelor of Hispanic Language and Literature, UNICAM, Morrito. Won the National Prize of Educative Publications Índice Nicaragua, pág. 2023 in the Literary Category.

Salazar Francis, Edgar

Specialist in University Management by the Universidad Nacional de Ingeniería (UNI). Bachelor in Bilingual Intercultural Education. Agroforestry Engineer by the Universidad de las Regiones Autónomas de la Costa Caribe Nicaragüense (URACCAN). General Director of the Regional Autonomic Educational System (SEAR by its Spanish acronym). Link of the Regional Autonomic Educational System (SEAR); member of the Education National Commission and member of the Web of Educational Investigators of Nicaragua (RIENIC by its Spanish acronym). Has

participated as lecturer in national and international congresses with topics linked to social and educational areas.

Vanegas Guido, Salvador

Independent investigator. Doctor in Education, Master in Administration and Business Administration, with emphasis on Finances, Universidad Centroamericana (UCA). Works as Minister-Adviser of the President of the Republic for topics of Education. Has developed an ample experience as university professor in areas of undergraduate and postgraduate, as well as in design and implementation of Public Policies, Educational Model, Infant Education, Planification, and Strategic Management, likewise in the creation of Indicators of Management Guided towards results.

Van de Velde, Herman

Doctorate in Pedagogical Sciences, by the Instituto Pedagógico Latinoamericano y Caribeño (Cuba), Master in Methodologies of Educational Investigation (Italia) and Bachelor in Pedagogical Sciences in the Catholic University of Louvain (Belgium). For more than 40 years, he works in Nicaragua in the area of education.

As pedagogue, he has developed practical and formal work experiences, both in Belgium (3 years), as well as in Nicaragua from the educational levels of pre-school, elementary, high school, university education and postgraduate. He was founder and general coordinator of the Foundation of ÁBACOenRed. Currently works as popular educator.

Zúniga Moreno, Javier Antonio

Forestry Engineer, Universidad Nacional Agraria (UNA). Investigator and Regent in forestry topics. Agricultural Technician in crops of short cycle and management of higher and lower cattle by the National Technical and Technological Institute (INATEC by its Spanish acronym). Coordinator of forestry projector. Teacher with more than 10 years of experience. Has served as responsible of the Department of Strategic Programs, specialist of vocational training, assigned to the Division of Investigation for the development of the Agricultural Sector. Possesses aptitude for the design of strategic plans for the management of natural forests and forestry plantations. Currently works as Methodologic Technical Director at INATEC.

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Rosario Murillo Zambrana
Vicepresident of the Republic of Nicaragua

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