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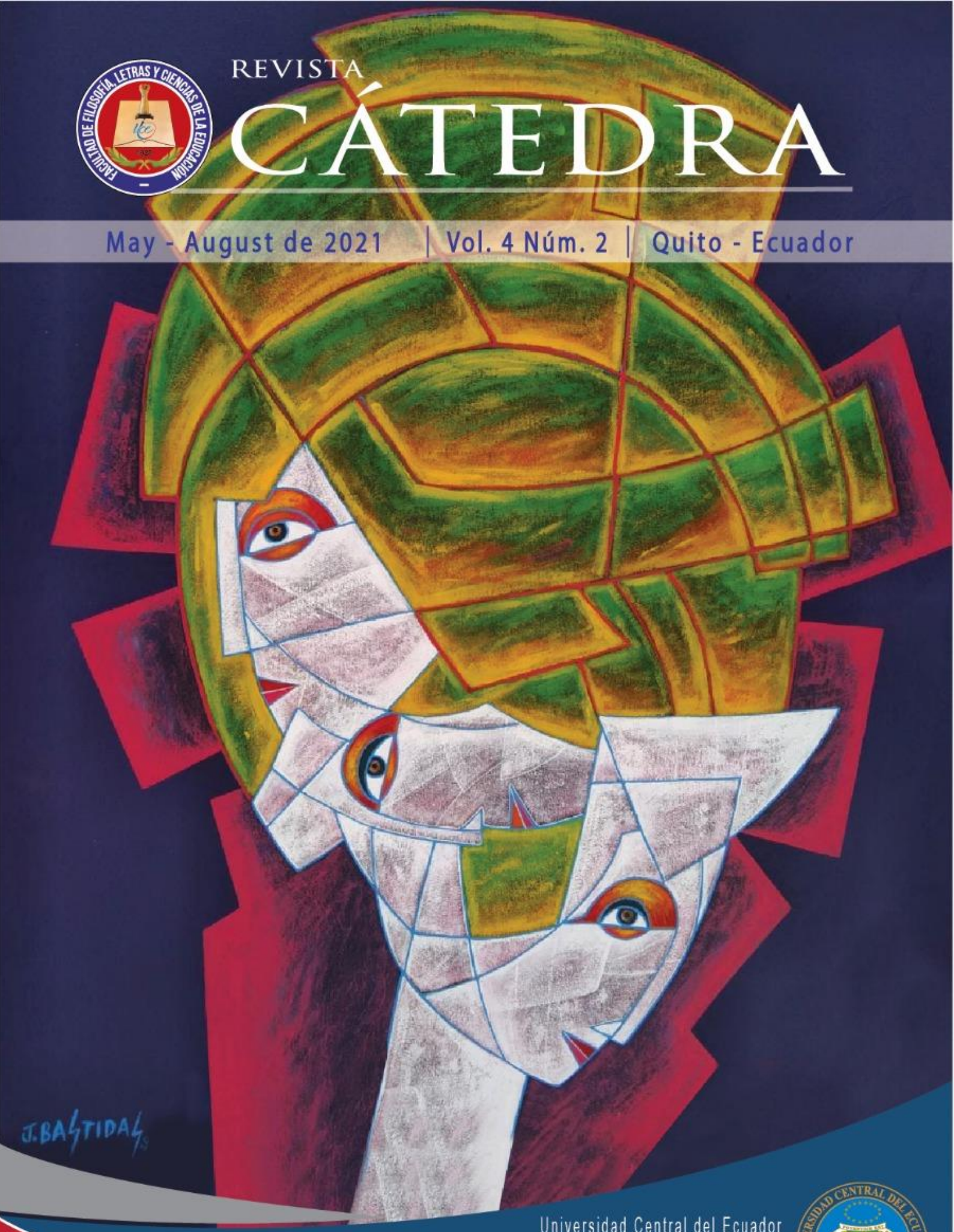

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Facultad de Filosofía, Letras y Ciencias de la Educación

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La *Revista Cátedra,* which belongs to the Faculty of Philosophy, Letters and Education Sciences of Universidad Central del Ecuador has been a means of communication since 1992; the academic voice of the professors was expressed through the bulletins, whose relevant objective was to improve the educational quality based on their experience, wisdom and knowledge as professors forming other educators. On May 2018, Revista Cátedra reemerges as a space that creates and disseminates articles oriented to the improvement of the educational process and its linkage with society.

OBJECTIVE
To disseminate multidisciplinary scientific unpublished articles, elaborated under the parameters of the research methodology, written with academic rigor and based on the teaching practice.

TOPICS
The topics covered are the theoretical bases of the Education Sciences in its different specialties and levels of the educational system.

TARGET
The Revista Cétedra is directed to all the national and international researchers interested in publishing quality works that contribute to the improvement of the educational process.

From its origins, the Revista Céetdra was published in printed format. It is currently published in electronic format, using virtual environments to align to the needs of the revista s users and editors.

MISSION
The Revista Cétdra, of Universidad Central del Ecuador, Faculty of Philosophy, Letters and Education Sciences, disseminates scientific articles on diverse areas related to the Education Sciences, supported in the methodology of educational research and community service.

VISION
To be promoters in the publication of high-quality scientific articles oriented by a research and from different areas of knowledge to constitute in the most prestigious reference in the comprehension and improvement of the educative process.

FOCUS AND SCOPE: Revista Cátedra has as theoretical bases the Education Sciences in its different specialties and levels of the educational system. It disseminates scientific-academic articles written under research parameters. It is open to

national and international writers interested in contributing significantly to the solution of current educational problems.

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The Revista Cétdra has a quarterly frequency, and is published the first fifteen days of the first month of each period from January-April, May-August, September-December.

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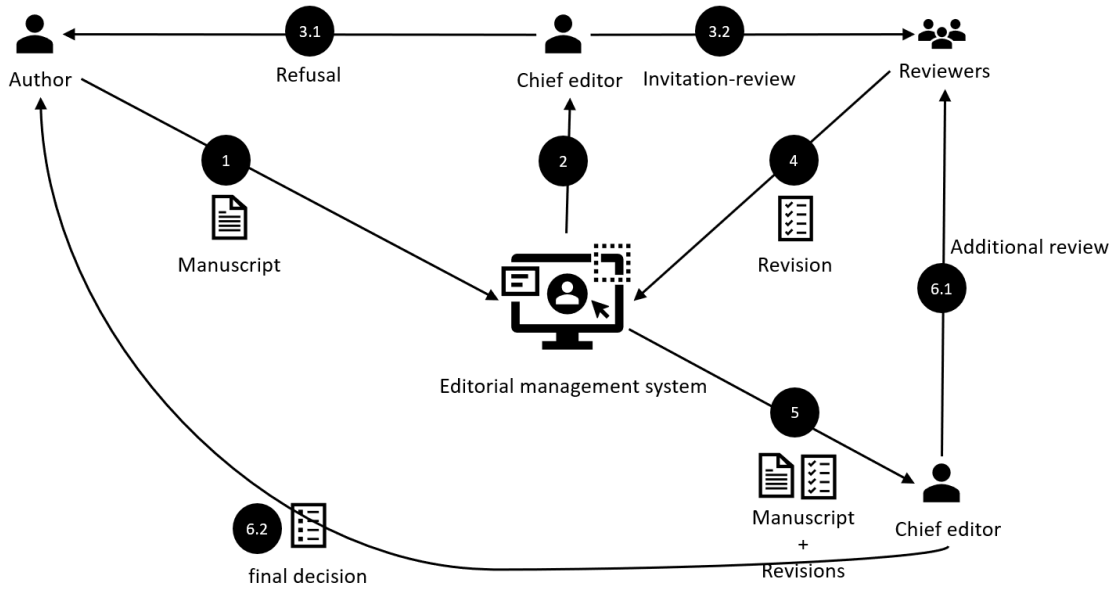

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- **Confidentiality:** Publishers and members of the editorial board are committed to keep confidentiality of manuscripts, authors and reviewers.
- **Time for publication:** The periodicity of the journal is quarterly; therefore, editors are the guarantors of the fulfillment of time limits for revisions and publication of accepted works.

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Philosophy

EDITORIAL

It is a pleasure for the Revista Cátedra to present volume four, number two in the electronic version. The thematic developed has its theoretical bases in the Educational Sciences in its different specialties and educational levels; thus, some relevant aspects are exposed, such as education-Informatics, mathematics, interculturality, gender and philosophy.

The contents presented in this new issue are characterized by being elaborated under the parameters of research methodology. In addition, they are built with academic rigor and based on teaching practice.

The issue consists of six approved articles:

The first article entitled *Teachers' Appropriation of Technological Capital during the Covid-19 pandemic,* authored by Lizbeth Ponce-Tituaña and Alex Lucio-Paredes. The manuscript describes the limited resources and capabilities of Ecuador to generate non-face-to-face education processes, educational inequality and the digital divide that arose from the Covid-19 pandemic. The objective of this research is framed in the challenges to give continuity to education through the analysis of the forms and levels of appropriation of Technological Capital in its state. The data collection method was the survey. The 38-question questionnaire was applied to 109 teachers. The results showed that the mean of teachers' embodied technological capital is 11.1 % Advanced, 20.4 % Intermediate, 21.8 % Medium, 27.1 % Basic, and 13.1 % Null. In the last 6 months prior to the study, 72% of teachers received a training certificate on digital competencies. The dominant forms of objectified capital are laptop and smartphone. 35.8 % from 10 to 20 megabytes, 34.9 % from 1.5 to 5 megabytes and 22.9 % from 30 to 40 megabytes in internet speed. The authors conclude by indicating that education is a responsibility of the State, and it should allocate the necessary resources to provide teachers with technological tools, train them and certify them in the use of ICTs free of charge, permanently and in a timely manner.

The second article entitled *Design of an educational mobile application through App Inventor to reinforce the learning process in operations with whole numbers*, by Cristhian Quishpe-López and Santiago Vinueza-Vinueza, was written by Cristhian Quishpe-López and Santiago Vinueza-Vinueza. The manuscript arises from the need to develop and implement new technologies that help to enhance learning. This proposal analyzes the impact of an educational mobile application designed on the App Inventor platform, which seeks to help reinforce the learning process of integer operations. We took advantage of the ease of use presented by the free online platform, to structure in a striking way all the content according to the academic level of the user. Thus, several screens were developed in the application called MatEstudio, each of these screens serve to strengthen the learning process. Subsequently, a survey was applied, in which, based on the results obtained, it became evident that there is a problem for the correct understanding of the theory and practice of operations with integers. The authors conclude by indicating that it

is feasible to implement an Educational App to reinforce the learning process of operations with numbers. However, there are several limitations, among the main ones, the access to the network and the poor use of the program by the user.

The third article entitled Perception about textbooks in the teaching-learning of Mathematics, authored by Ángel Montaluisa-Vivas, Edgar Salas-Jaramillo, Leonardo Canga-Unda and Adriana Ponce-Benavides. The manuscript analyzes the textbooks that are used as a necessary resource in the teaching-learning process of Mathematics. The purpose of this research is to determine the level of satisfaction that textbooks generate in students and teachers. It should be emphasized that the Ministry of Education provides this school material free of charge to all public institutions in the country and, therefore, motivates research on its application and use. The results are expressed by levels of schooling, both in the General Basic Education sub-level and in the General Unified High School, and by the curricular elements studied. The authors conclude by indicating that the objectives proposed for the Unified General Baccalaureate have a higher level of satisfaction than those declared for General Basic Education, and also indicate that for both levels there is a medium level of satisfaction with the elements investigated in the textbooks, which means that the students who use them are not oriented to continue more complex learning.

The fourth article entitled The intercultural mexiquense university and rural and indigenous communities. Strategies of rapprochement and linkage experiences, authored by Zuzana Erdösová. The manuscript describes the educational model of the intercultural university and aims at the construction of knowledge in conditions of equity and dialogue with native peoples, however, due to the neoindigenist ideological load of the educational model, the theoretical approach and actual practices often differ. This article analyzes the ways in which a specific university, the Intercultural University of the State of Mexico, relates to the indigenous communities of the region. The findings are based on an analysis through the testimonies of a series of indigenous and non-indigenous protagonists, involved in the processes of Community Liaison, one of the axes of the educational model. The author concludes by indicating that the university-community relationship is characterized, on the one hand, by the openness of the University to the initiatives arising from the communities, including the students who come from them, but, on the other hand, by a modernizing attitude that gives priority to the notions of economic development understood in neoliberal terms before the cultural autonomy of the development of the native peoples. In this sense, demystifying the hegemonic educational discourses becomes of primary importance to ensure the transparency of the educational system and its functionality in the context of ethnic diversity.

The fifth article entitled *Gender roles in the fang family concept: a differential socialization system*, authored by Pedro Bituga-Nchama. The manuscript focuses on making visible the gender roles, products of the differential socialization of the Fang family concept. This fundamental objective shows that since the family is an institution in which the first socialization of people takes place, the Fang family

model is not far from this standard, because the way of socialization within this culture means that men are assigned different roles than women. In order to better study this issue, a quantitative methodology has been used, based on the descriptive method, which has made it possible to reflect the incidence of this phenomenon in the selected population group. The author concludes by reaffirming that traditional gender roles are promoted in different ways within the concept of the Fang family, fostering an education of dependence, where the cognitive and personal skills of women are always undervalued by the Fang patriarchal system.

The sixth article entitled *The concept of guilt from the main referents of contemporary philosophy*, authored by Floralba Aguilar-Gordón and Karol Batallas-Almeida. The manuscript discusses the concept of guilt from Nietzsche, Heidegger, Jaspers and Ricouer as the main referents of contemporary philosophy that have addressed this topic. The article reflects on the different conceptions of guilt and its relation to the modern subject, its existence, transcendence and responsibility. The methodology used for the structuring of this document is supported by the main guidelines of qualitative research, it relies on the bibliographic review, the analysis of texts, and consequently, the hermeneutic method for the interpretation of theories, categories, principles, doctrines and conceptions. The authors indicate that in a technified era, dominated by the utilitarian and consumerist tendency, mass production and the alienation that the human being lives with respect to himself, it is essential to rethink about authenticity, individuality and subjectivity in unique contexts such as Ecuador.

Catedra Journal thanks all the authors and reviewers of the articles that have made possible the publication of this issue. It extends an invitation to the national and international academic community to present their research papers related to Educational Sciences in their different specialties and educational levels.

Directors/Chief Editors

REVISTA CÁTEDRA

Apropiación del Capital Tecnológico de los docentes durante la pandemia de Covid-19

Teachers' Appropriation of Technological Capital during the Covid-19 pandemic

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Resumen

La pandemia de Covid-19 provocó la suspensión de clases presenciales. Los limitados recursos y capacidades del país para generar procesos de educación no presencial, la desigualdad educativa y la brecha digital, marcó desafíos para dar continuidad a la educación utilizando las TIC. El estudio tuvo como objetivo analizar las formas y niveles de apropiación de Capital Tecnológico en su estado: objetivado, incorporado e institucionalizado y su aplicación en el proceso de enseñanza-aprendizaje.

La investigación es de enfoque cuantitativo y se realizó en las Unidades Educativas: Abdón Calderón, Alto Cenepa y Rafael Alvarado (Quito-Ecuador) desde septiembre de 2020 a enero de 2021. El método de recolección de datos fue la encuesta. El cuestionario de 38 preguntas se aplicó a 109 docentes. Los resultados demostraron que la media del capital tecnológico incorporado de los docentes es 11,1 % Avanzado, 20,4 % Intermedio, 21,8 % Medio, 27,1 % Básico, y un 13,1 % Nulo. En los últimos 6 meses previos al estudio, el 72 % de docentes recibió un certificado de capacitación sobre competencias digitales. Las formas dominantes de capital objetivado son laptop y *smartphone*. El 35,8 % de 10 a 20 megabytes, el 34,9 % de 1.5 a 5 megabytes y el 22,9 % de 30 a 40 megabytes en la velocidad de internet.

La educación es una responsabilidad del Estado, y debe destinar los recursos necesarios para dotar a los docentes de herramientas tecnológicas, capacitarlos y certificarlos en el uso de las TIC de forma gratuita, permanente y oportuna.

Palabras clave

Apropiación, capital tecnológico, competencias, incorporado, institucionalizado,objetivado.

Abstract

The Covid-19 pandemic led to the suspension of face-to-face classes. The country's limited resources and capacities to generate non-face-to-face education processes, educational inequality and the digital divide, posed challenges to the continuity of education using ICTs. The objective of the study was to analyze the forms and levels of appropriation of Technological Capital in its state: objectified, incorporated and institutionalized, and its application in the teaching-learning process.

The research has a quantitative approach and was conducted in the Educational Units: Abdón Calderón, Alto Cenepa and Rafael Alvarado (Quito-Ecuador) from September 2020 to January 2021. The data collection method was the survey. The 38-question questionnaire was applied to 109 teachers. The results showed that the average embodied technological capital of teachers is 11.1% Advanced, 20.4% Intermediate, 21.8% Medium, 27.1% Basic, and 13.1% Null. In the last 6 months prior to the study, 72% of teachers received a training certificate on digital competencies. The dominant forms of objectified capital are laptop and smartphone. 35.8 % from 10 to 20 megabytes, 34.9 % from 1.5 to 5 megabytes and 22.9 % from 30 to 40 megabytes in internet speed.

Education is a responsibility of the State, and it must allocate the necessary resources to provide teachers with technological tools, train them and certify them in the use of ICTs free of charge, permanently and in a timely manner.

Keywords

Appropriation, technological capital, competencies, embedded, institutionalized, objectified.

1. Introduction

The World Health Organization (WHO) declared Covid-19 a pandemic in March 2020. This led to the suspension of on-site classes and posed challenges to the continuity of learning. According to the UN (2020) "closures of schools and other educational facilities have affected 94% of students worldwide" (p. 2). The pandemic has exacerbated inequality in access to the education system. According to this international organization, 40% of the poorest countries have not been able to implement effective public policies to guarantee the right to education during the health crisis. The most affected students and teachers are those in vulnerable situations, among which are those who have "fewer digital skills and less access to connectivity and computer equipment" (UN, 2020, p. 8).

To give continuity to education through non-face-to-face means, according to ECLAC-UNESCO (2020) "requires taking into account the characteristics of national curricula (...), the resources and capacities of the country to generate distance education processes, the levels of segregation and educational inequality in the country" (p. 3). In Ecuador, according to the Multipurpose Survey, referring to ICTs, yielded the following results at the national level; only 45.5% of households have access to the Internet and only 23.3% nationally use a

desktop computer in their homes. The most used social network is WhatsApp, however, only 24.3 % of economic income quintile one uses it (INEC, 2019, p. 1-40). According to ECLAC-UNESCO (2020) out of 33 countries analyzed only 14 countries considered necessary "teacher training, especially in tools for the use and management of information and communication technologies (ICT)" (p. 3). This study affirmed that teacher training in the use and application of ICTs in Ecuador had major limitations, simplifying teacher training to the mere execution of a self-learning course called My Online Classroom.

The application made by teachers of ICT, in the teaching process, enables variations in learning outcomes, according to Botello and Guerrero (2014), "the joint use of ICT allows increasing the average score of students in the PISA test between 5 % and 6 % (...) when ICT are used within the classroom" (p. 10).

In this scenario, ICT and the knowledge about them, becomes a new kind of Cultural Capital that has been called Technological Capital. According to Ramirez and Casillas (2014) from the perspective of Pierre Bourdieu state that:

> Technological capital (kt) comprises all knowledge, know-how and know-how to use in the learning process (...). Its possession is an attribute that differentiates individuals and allows them to compete better in many different fields and social spaces (p. 14).

For this reason, it is important to analyze the appropriation of the Technological Capital of teachers and its application in the teaching-learning process, in order to show the challenges faced by the educational system in the midst of a pandemic, which has deepened the existing difficulties and has created others in education.

The content of the article is a study of the Technological Capital of teachers working in the Abdón Calderón Educational Unit, a public institution; the Alto Cenepa Educational Unit, a private institution, and the Rafael Alvarado Educational Unit, a municipal institution in the Metropolitan District of Quito, Ecuador, from September 2020 to January 2021. The study made it possible to analyze the forms and levels of appropriation of Technological Capital in its state: objectified, incorporated, and institutionalized by teachers, and its application in the teaching-learning process.

The obstacles of the study were the legal and factual limitations in the application of the instrument. There is distrust among the respondents when answering questions about their work space. The reasons are different, but, mainly, distrust of reprisals due to the visibility of the lack of training, implementation and endowment in terms of technological capital.

The structure of the article consists of the introduction, which formulates and justifies the research problem, the object, objectives, and limitations presented during the study. Likewise, the contribution of the article to education is established. In the literature review, the concept of Technological Capital is developed, detailing the objectified, incorporated and institutionalized state. We end with the presentation of the statistical data, the discussion of results, and present the conclusions of the research.

2. Literature review

The beginning of the 21st century is marked by the explosive development of Information and Communication Technologies (UNESCO, 2013, p. 10). So much so, that society has been transformed into a digital panopticon, where "internet, smartphone, and Google glass, (...) dominates the appearance of freedom and unlimited communication" (Han, 2014, p. 33). On the other hand, Castells states that we are in a network society "whose social structure is

composed of activated networks of digital communication and information technologies based on microelectronics" (Castells, 2009, p. 49). As a sample, in 2017 in "Ecuador 80% of young people between the ages of 18 to 24 use the internet" (UNESCO, 2017, p. 11). Although "this does not mean, (...) that people all over the world participate in networks. In fact, for now, most do not" (Castells, 2009, p. 51). For example, in the country only 38% of income quintile one accesses an internet network (UNESCO, 2017, p.10), for reasons of geographic location or socio-economic status.

In the framework of the network society, the pedagogical theory of connectivism conceives education as a process of "transmitting and stimulating (...) resources through the use of technological tools, generating a faster and more efficient product" (Krüger, 2006, para. 17). However, education "is not only about the use of devices. Behind a device and a platform is a set of factors that give meaning to its use (...)" (Mendoza, 2020, p. 347).

During the pandemic, educational actors have more frequently applied technologies in teaching because "(...) they favor non-presential contact between people and the discovery of knowledge (...)" (Uzcátegui and Albarrán, 2020, p. 44). Although this process is not mechanical, because,

> intelligent technologies such as the Internet cannot be considered simple vehicles that transport information, but rather, by broadening and complexifying the process of accessing, processing and expressing knowledge, they substantially modify the way in which the individual constructs himself, understands the context and understands himself (Pérez, 2013, p. 55).

2.1 Technological capital (KT)

Cultural Capital is constituted by "cultural factors of class and economic factors" (Bourdieu, 2003, p. 33). Therefore, for Bourdieu this means "a break with the assumptions inherent in both the common vision that considers school success or failure as the result of natural aptitudes" (Bourdieu, 2012, p. 11). In the framework of the network society, from the perspective of Cultural Capital, the concept of Technological Capital has been developed, which allows,

> to understand how the practice in the use of digital technology is constituted in the occurrence of individuals, within an institutional framework, (...) being, as indicated by the roles, goals, social representations and habitus of the agents involved, which will ultimately generate or not, a transformation in the educational process mediated by ICT (Salado, Velázquez and Ochoa, 2014, p. 217).

Technological Capital is constituted and represented in the following states: objectified, incorporated and institutionalized.

2.2 Objectified technological capital

In its objectified state, the Technological Capital is the,

> set of technological objects that are appropriated in their materiality and symbolic meaning. Technological devices, connectivity resources, software (original/pirata), degree of updating (version) and is observed through equipment, connectivity and expenditure or investment in (...) technology inputs (Salado-Rodríguez and Ramírez-Martinell, 2018, p. 129).

In the educational process, the objectified capital is important because, for example; "while in a classroom the teacher has the immediacy of communication with his students, in a distance event the interaction depends on connections, data transmission speed, video and audio quality" (Mendoza, 2020, p. 348) and other factors that affect job performance.

2.3 Built-in technology capital

In its embodied state, Technological Capital is constituted "by the knowledge (...): mastery of software and programs, as well as other ICT-related skills" (Salado-Rodríguez and Ramírez-Martinell, 2018, p. 130). However, this definition under the conditions of the network society, is incomplete and insufficient, due to its excessive generality and ambiguity that does not allow us to be certain which are those specific skills that teachers have to know and apply in the teaching process.

To complement the incorporated state of Technological Capital and provide certainty about those skills that the teacher should apprehend in terms of ICT, we refer to the concept of digital competence; which consists of "skills, knowledge (...) to create and manage information (...) and ability to use ICT, which are primary tools for information management" (UNESCO, 2019, p. 60).

According to the United Nations specialized agency, teachers should incorporate six aspects of Technological Capital in their professional practice, which are: "1. Understanding the role of ICT in educational policies; 2. Curriculum and evaluation; 3. Pedagogy; 4. Application of digital competencies; 5. Organization and administration; 6. Professional learning of teachers" (UNESCO, 2019, p. 10), in order to develop the teaching-learning process and enhance their own professional development.

Built-in technology capital

Aspects	Teachers' Competence
Understanding the role of ICT in educational policies	Determine how and to what extent their teaching practices correspond to institutional and/or national policies and support their achievement.
Curriculum and evaluation	Analyze curricular standards and determine the possible pedagogical use of ICT to meet these standards.
Pedagogy	Appropriately select ICT to support specific teaching and learning methodologies.
Application of digital competencies	Know the functions of computer hardware components and the most common productivity programs, and be able to use them.
Organization and administration	Organize the physical environment in such a way that technology is at the service of different learning methodologies in an inclusive manner.
Professional learning of teachers	Use ICT for their own professional development.

Table 1. Digital aspects and competencies of Embodied Technology Capital (UNESCO, 2019, pp. 28-33)

2.4 Institutionalized technological capital

In its institutionalized state, the Technological Capital is constituted by the,

> set of degrees, diplomas and certificates that validate, institute and recognize knowledge, skills and abilities that cover a symbolic value to the diploma (institution factor, degree of prestige) and defines a hierarchical status by the type of knowledge and is measured in terms of the number of courses and diplomas and certificates (Casillas, Ramirez and Ortiz, 2013, p. 7).

The institutionalized Technological Capital fulfills the function of being "perceived by social agents whose categories of perception are such that they are able to know it (perceive it) and recognize it, give it value" (Bourdieu, 2001, p. 116), in the middle of a network society, where the use of ICT according to Vein "is influencing employment both as an industry that creates jobs and as a tool that allows workers to access new forms of work, in a new and more flexible way" (2003, para. 8).

3. Methodology

The research was based on the quantitative approach. The data collection method was the survey and the instrument was the questionnaire. The process followed to obtain the data is detailed below:

1. **Selection of the research area**: The pandemic, partial mobility restriction, and non face-to-face teaching were limitations for the selected study area. The research was carried out in the educational institutions that provided us with the facilities and permissions to carry it out. The selected areas were the Abdón Calderón Educational Unit, a public institution, located in the parish of Calderón; the Alto Cenepa Educational Unit, a private institution, located in the parish of Calderón; and the Rafael Alvarado Municipal Educational Unit, a municipal institution, located in the parish of Tumbaco.
2. **Population**: We worked with the universe of teachers of the three educational institutions. The total population was 109 teachers, ranging in age from 20 years old to over 60 years old. The population of teachers of the Unidad Educativa Abdón Calderón was 69 teachers; the Unidad Educativa Municipal Rafael Alvarado was 24 teachers, and the Unidad Educativa Particular Alto Cenepa was 16 teachers.
3. **Design and application of the research instruments**: The instrument applied for data collection was the questionnaire elaborated in the Microsoft Forms tool of Microsoft Office 365. It was done in this application for security reasons and easy access, at the same time, it is of general knowledge for teachers, because the Ministry of Education provided institutional Office accounts to all teachers in the public sector, in addition, educators from other institutions also handle institutional emails, for this reason, the tool was not new to them.
4. **Validation of the instrument**: To determine its legitimacy, the validation of the questionnaire was requested from three experts: a teacher from the Universidad Andina Simón Bolívar; another teacher from the Universidad Central del Ecuador and a teacher belonging to the Ministry of Education.
5. **Data analysis**: the data obtained were interpreted using Microsoft Excel. The data from the three educational institutions were unified in order to carry out an in-depth analysis of the Technological Capital, objectified, incorporated and institutionalized.

3.1 Technological Capital analysis questionnaire for teachers

The questionnaire that was applied to teachers of educational institutions; public, private and municipal consists of thirty-eight questions. From question one to question four, we inquired about the informative data of the teachers; from question five to question thirty-eight, we explored the three states that comprise technological capital, which are detailed below:

From question five to question twenty-eight, we inquire about objectified technological capital; from question twenty-nine to question thirty-three, we inquire about embodied technological capital; finally, from question thirty-four to question thirty-eight, we inquire about institutionalized technological capital.

3.2 Reliability of Likert-type questionnaire (ordinal polytomous)

To determine the reliability of the questionnaire, we calculated Cronbach's alpha (∝), which "describe or explain the significance of the alpha statistic in various ways" (Taber, 2017, p. 3). In addition, it is a measure of reliability of surveys conducted in scientific research studies in education. The formula for calculating Cronbach's alpha is found in Equation 1, and is as follows.:

$$\propto = \frac{K}{K-1}\left[1 - \frac{\sum_{i=1}^{k} \sigma_{Yi}^2}{\sigma_X^2}\right]$$

Equation 1

∝= Cronbanch's Alpha.

K = Number of questions. In this research, three were applied with Likert scale, with a total of 45 items, each with a five-choice scale.

σ_{Yi}^2= Variance of the scores of question i.

σ_X^2 = Variance of the observed scores of the individuals. In our research, the 109 survey responses.

The calculation of Cronbanch's alpha (∝) was 1, this allows us to have a high degree of reliability of the questionnaire used to know the digital competencies of the teachers, in reference to the incorporated Technological Capital.

3.3 Data collection

Thirty-four questions of the questionnaire are multiple choice. Three questions have been elaborated under the Likert scale (ordinal polytomous qualitative) corresponding to a scale of skills perception (advanced, intermediate, medium, basic and null); one question has been structured under the Likert scale (dichotomous quantitative) with the option of yes and no.

The survey was conducted during the first quarter of the Sierra Regime school year at the Abdón Calderón Educational Unit (Public - Calderón), Rafael Alvarado Municipal Educational Unit (Municipal - Tumbaco) and Alto Cenepa Private Educational Unit (Private - Calderón).

3.4 Population

The completion of the questionnaire was voluntary (the teachers were notified by the authorities of the institutions about this research to their institutional e-mails, clarifying that the completion was free and voluntary) the link to the Microsoft Forms survey was sent to the institutional e-mails of the main authorities of the educational institutions. The total number of teachers surveyed from the three institutions was 109, including men and women.

4. Methodology

4.1. Data collection

A total of 109 teachers participated in the study, each with the following informative data:

	U.E. A. C	U.E.M R. A	U.E. P. A. C	%
Gender				
Female	45	21	8	68
Male	24	3	8	32,1
Other	0	0	0	0,0
Total	69	24	16	100,0
Age range				
Between 20 to 30 years old	4	0	3	6,4
Between 31 to 40 years old	20	7	7	31,2
Between 41 to 50 years old	22	11	4	33,9
Between 51 to 60 years old	21	5	1	24,8
Between 60 years and over	2	1	1	3,7
Total	69	24	16	100,0
Level that teaches				
Initial I and II	0	0	0	0,0
High School	0	0	2	1,8
Elementary General Basic Education	0	0	2	1,8
Middle Basic General Education	0	2	2	3,7
Higher General Basic Education	30	11	5	42,2
Baccalaureate	39	11	5	50,5
Total	69	24	16	100,0
Level of economic income				
Less than 400	7	2	1	9,2
From 401 to 600	11	0	7	16,5
From 601 to 800	23	5	2	27,5
From 801 to 1000	22	11	2	32,1
More than 1000	6	6	4	14,7
Total	69	24	16	100,0

Table 2. Informative data of the teachers of the three educational institutions.

4.2. Targeted Technological Capital

The teachers of the three educational institutions in question 5, about the electronic equipment they have at home, were asked to select several options. The three options with the highest number of choices were a laptop, printer with scanner and radio. In question 6, the teachers responded that 89.9% have broadband or fiber optic internet, the other 7.3% have internet access from a neighbor or close relative, and 1.8% have access through telephone recharges. In question 7 on the type of speed of their internet 34.9 % responded that they have 1.5 to 5 mbps, 35.8 % 10 to 20 mbps, 22.9 % 30 to 40 mbps, 5.5 % 80 to 100 mbps and 0.9 % 200 mbps and more. In question 8 of How much time do you spend using the Internet for personal distraction or surfing social networks? 68 % answered from 30 minutes to 1 hour, 21.1 % from 2 to 3 hours, 6.4 % from 4 to 6 hours and 4.6 % more than 6 hours. In the next question about what types of social networks do they frequent for distraction? The top three included Facebook, WhatsApp and YouTube.

Question 10 referring to How much time do you use to plan your classes, 10.1 % from 30 minutes to 1 hour, 50 % from 2 to 3 hours, 19.3 % from 4 to 6 hours and 20.2 % more than 6 hours. In question 11 on How much time do you spend teaching your students using digital platforms? 39.4 % from 40 minutes to 1 hour, 12.8 % 1 hour, 47.7 % from 4 to 6 hours. On question 12 on What digital platforms do you use to teach your subjects? 101 teachers responded that the most used platform is Zoom Meeting. On question 13 on What type of digital tools do you use to teach your classes? They answered that 94.5% use synchronous tools and 5.5% use asynchronous tools. In question 14 on What type of digital resources do you use to plan your classes, 89 teachers use educational platforms, 59 teachers use gamification resources and 49 teachers on online assessments. Question 15 on What types of educational platforms do you use to assign homework to your students? Responded 39 % Google Classroom, 22 % Moodle, 19 % Microsoft Office 365 package, 15 % the institution's own platform and 6 % Edmodo. Next, question 16 asks What types of educational platforms do you use to apply assessments to your students? 35 % responded that they use Google Classroom, 22 % Moodle, 20 % the institution's own platform, 17 % use Microsoft Office 365 Package and 6 % Edmodo.

Question 17 asks about the technological equipment used by teachers to teach their classes. Here we ask whether the teacher knows that the educational platforms (creation of virtual learning environments -EVA- such as MOODLE, FirtsClass or own creation) used in the teaching-learning process, are licensed. Sixty-eight percent answered that it was free, 17% paid by the institution and 16% paid by the teacher. Question 18 asks whether the teacher knows if the institution where he/she works has its own educational platform, 58% answered No, 26% said Yes and 17% said they did not know. In question 19, what is the medium you use to teach your virtual classes? 89 % answered Laptop, 10.1 % use desktop computer and 0.9 % a Tablet. Question 20 is about The technological equipment you use in your classes is? And teachers answered 59 % a desktop computer, 18 % a laptop, 14 % a tablet and 9 % smartphone. Question 21 asks whether the technological equipment you use to teach your online classes was provided by the educational institution where you work? 57 % of teachers answered Yes and 43 % answered No. In question 22, is the Internet service you use to teach online classes to your students financed by the educational institution where you work? 99% of the teachers answered No and 1% answered Yes.

Question 23 asks about the technological specifications of the electronic equipment In your electronic equipment such as desktop or laptop computers, what operating system do you have installed? 99.1% answered that the operating system is Windows and 0.9% Mac Os. In question 24 in your electronic equipment such as smartphone, what operating system do you have installed? They answered 92 % that the operating system of their smartphone is

Android and 8 % have iOS (Apple brand) installed. Question 25 asks whether the programs (e.g. Word, Excel, Power Point and Antivirus) installed on their electronic equipment such as personal computers or laptops are licensed, unlicensed or unknown. Thirty-four percent have a license, 33% do not have a license and the other 33% do not know. Question 26 asked about which of the following methods do you use to communicate with your friends and family? 62 % answered that they make calls via WhatsApp, 33 % cellular calls directly from their smartphone and 5 % make phone calls from a local home phone. Question 27 asks about Which of the following means do you make use of to organize collaborative work in your classes? 76 % answered that they make use of group meetings via ZOOM, Teams or Skype, 21 % Group chats via WhatsApp, 2 % Collaborative files on Google Drive and 1 % Facebook Groups. In question 28 Which of the following means do you use to coordinate activities with your students' legal representatives? 52 % answered group chats via WhatsApp, 43 % group meetings via ZOOM, Teams or Skype and 5 % emails.

4.3. Incorporated Technological Capital

From question 29 to question 33, the questionnaire asked about the Technological Capital incorporated.

Question 29 asks whether teachers make use of the following ways to access academic information on the web pages, through a dichotomous quantitative Likert scale composed of the following variables.

29.Answer with yes or no, if you make use of the following ways to access academic information on the websites

Ítems	Yes%	No %	Total %
Advanced search through search engines such as: Google, Bing Baidu and more.	90,8	9,2	100
Search in Google Scholar, Redalyc, Dialnet, SciELO and more.	46,8	53,2	100
Check specialized and recognized websites in education such as: EDUTEKA, EDUCARED, MINEDUC.	79,8	20,2	100
Search in blogs or anonymous web pages	23,9	76,1	100
Search only in the first 10 pages recommended by your search engine.	43,1	56,9	100
Cites bibliographic sources in your academic files using Zotero/Mendeley or Word citation tools	53,2	46,8	100
Recognizes reliable sources of information	78,0	22,0	100
Makes use of anti-plagiarism websites to review students' academic papers	23,9	76,1	100
Visits digital repositories of universities or academic institutes	55,0	45,0	100
Uses metasearch engines	26,6	73,4	100
Search for digital books or journals	88,1	11,9	100

Table 3. You make use of the following ways to access academic information on web pages.

As can be seen in Table 3, teachers have developed technological skills in searching and accessing academic information on web pages. In the advanced search through search engines such as: Google, Bing, Baidu and more, answered 90.8 % Yes and 9.2 % No; in reference to Google Academic Search, Redalyc, Dialnet, SciELO and more 46.8 % Yes and 53.2 % No; reviews specialized and recognized web pages in education such as: EDUTEKA, EDUCARED, MINEDUC answered 79.8 % Yes and 20.18 % No; searches in blogs or anonymous web pages answered 76.1 % No and 23.9 % Yes; searches only in the first 10 pages recommended by their search engine 56.9 % answered No and 43.1 % Yes; cites in their academic files bibliographic sources using Zotero/Mendeley or Word tools for citing, 53.2 % answered Yes and 46.8 % No; recognizes reliable sources of information, 78 % answered Yes and 22 % No; makes use of anti-plagiarism web pages to review the academic work of their students 76.1 % answered No and 23.9 % Yes; visits digital repositories of universities or academic institutes 55 % answered Yes and 45 % No; uses meta-search engines 73.4 % No and 26.6 % Yes; searches digital books or journals 88.1 % answered Yes and 11.9 % answered No. These data give us a clear picture of how teachers during the period of the pandemic have been trained, either institutionally or personally, to develop technological skills and competencies on various tools, such as access to information on web pages.

In question 30 about which of the following devices do you mostly do your searches on web pages? They answered 78 % on a laptop, 11 % computer, 10 % smartphone, and 1 % a tablet. In questions 31 and 32 on the digital competencies that teachers have in the area of information, information literacy and data processing, the following results were obtained:

	Questions 31: Digital Competencies I	**Advanced %**	**Intermediate %**	**Middle %**	**Básic %**	**Null %**
1	Transferring audio, video and photos from device to computer	14,7	24,8	33,0	24,8	2,8
2	Editing of video, audio, images or bitmaps and vector images	7,3	14,7	22,9	36,7	18,3
3	Audio format conversion	9,2	13,8	22,9	31,2	22,9
4	Video format conversion	10,1	16,5	20,2	34,9	18,3
5	Image format conversion	11,0	12,8	29,4	34,9	11,9
6	Scanning and copying your documents	20,2	25,7	23,9	28,4	1,8
7	Downloading files from web pages	21,1	29,4	29,4	18,3	1,8
8	Creating digital resources for classroom presentations	13,8	27,5	35,8	22,9	0,0
9	Using educational platforms	12,8	30,3	33,0	22,9	0,9
10	Uploading files to clouds such as Google Drive or OneDrive	16,5	17,4	33,0	25,7	7,3
11	Compress and decompress files in ZIP or RAR formats	13,8	18,3	27,5	29,4	11,0
12	Convert Word, Power Point and Excel files to PDF	21,1	23,9	22,9	27,5	4,6
13	Upload Word, PDF or jpg files to educational platforms such as Moodle	11,0	28,4	24,8	24,8	11,0
14	Back up your accounts such as Whatsapp, photos and phone contacts	12,8	22,0	22,9	28,4	13,8

15	Organize meetings on communication platforms such as Zoom, Teams, GoToMeeting	15,6	27,5	27,5	19,3	10,1
16	Make online purchases	11,9	22,9	17,4	22,0	25,7
17	Using email	22,9	26,6	13,8	22,9	13,8
18	Upload videos to platforms such as Youtube	13,8	14,7	24,8	24,8	22,0
19	Downloading games or programs on your smartphone either from Play Store or App Store	4,6	17,4	18,3	32,1	27,5
20	Using bibliographic citation managers such as: Zotero and Mendeley	8,3	8,3	16,5	34,9	32,1

Table 4. Digital competencies I

	Question 32: Digital compentencies II	**Advanced %**	**Intermediate %**	**Middle %**	**Básic %**	**Null %**
21	Using educational platforms (e.g. Moodle, Edmodo, Google Classroom and more)	11,9	24,8	23,9	21,1	18,3
22	Creating online games	4,6	11,9	17,4	24,8	41,3
23	Designing online graphic organizers	8,3	13,8	19,3	33,9	24,8
24	Creation of online courses -MOOC	3,7	11,9	13,8	24,8	45,9
25	Use of interactive whiteboards	10,1	10,1	18,3	25,7	35,8
26	Creation of online assessment tools	8,3	21,1	20,2	33,0	17,4
27	Design of interactive presentations	9,2	17,4	26,6	33,9	12,8
28	Infographics and graphic design	6,4	15,6	18,3	36,7	22,9
29	Animated explanatory videos	9,2	9,2	17,4	34,9	29,4
30	Creation of online evaluations	6,4	24,8	18,3	29,4	21,1
31	Creation of online avatars	2,8	11,9	17,4	29,4	38,5
32	Designing online comics	3,7	11,0	16,5	22,0	46,8
33	Creating forums, assigning tasks, assessments and uploading files to platforms such as Moodle, Edmodo, Google Classroom and more.	14,7	20,2	19,3	22,0	23,9
34	Using Zoom and Teams resources such as creating a whiteboard, screen recording and sharing function	14,7	30,3	18,3	24,8	11,9
35	Create Whatsapp gifs and stickers.	6,4	15,6	19,3	22,0	36,7

Table 5. Digital competencies II

In the case of digital competencies in reference to the area of digital content creation; communication and collaboration of teachers can be seen in Table 4 and 5, where it is possible to denote that the predominant scale of competence is Intermediate and medium, basic and null, of the 35 different items proposed in the questionnaire. During the pandemic, many of the teachers were exposed to training in the mastery of various digital competencies to be able to teach virtual classes to their students and continue with the correct teaching-learning process.

In order to know the standard deviation, mean and confidence level of questions 31 and 32, where the digital competencies that teachers have in reference to the incorporated technological capital are analyzed. In question 31 and in relation to Table 4 on the Digital Competences I.

Question 31	Media	Standard deviation	Confidence level
Advanced	13,6	4,9	2,29
Intermediate	21,1	6,4	3,02
Intermediate	25,0	6,1	2,84
Basic	27,3	5,4	2,53
Null	12,9	9,6	4,51

Table 6. Descriptive analysis, Digital competencies I

The statistical trend on the average level of digital competencies incorporated by teachers, in the Advanced level of mastery has an average of 13.6 %; Intermediate 21.1 %; Medium 25.0 %; Basic 27.3 % and Null 12.9 %.

In question 32, which is related to Table 5 on Digital Competencies II:

Question 32	Media	Standard deviation	Confidence level
Advanced	8,0	3,7	2,1
Intermediate	16,6	6,3	3,5
Intermediate	19,0	3,0	1,7
Basic	27,9	5,4	3,0
Null	28,5	11,6	6,4

Table 7. Descriptive analysis, Digital competencies II

The statistical trend on the mean of the level of digital competencies incorporated by the teachers, in the Advanced level of mastery has a mean of 8.0 %; Intermediate 16.6 %; Medium 19.0 %; Basic 27.9 % and Null 28.5 %. The mean that has the highest frequency on the level of mastery of digital competences, has the highest representativeness the Basic level, which has a tendency of 27%.

In question 33 on the level of appropriation of digital competences in the area of information and digital literacy by means of a Likert scale, the results are as follows:

	Question 33: Level of appropriation of the digital competencies that you consider you have mastered in the following items	**Advanced %**	**Intermediate %**	**Middle %**	**Basic %**	**Null %**
1	Use of word processor (e.g. Word)	25,7	36,7	20,2	13,8	3,7
2	Use of presentation processor (e.g. Power Point)	21,1	42,2	20,2	11,9	4,6
3	Use of spreadsheets (e.g. Excel)	13,8	33,0	23,9	21,1	8,3
4	Use of statistical analysis programs (e.g. SPSS)	5,5	14,7	11,0	33,9	34,9
5	Use in Microsoft Office 365 the Teams application for team building and video calls	9,2	22,0	23,9	33,9	11,0

6	Use in Microsoft Office 365 the Forms application to create questionnaires or forms	6,4	19,3	22,0	36,7	15,6
7	Use in Microsoft Office 365 the SharePoint application to create team work and document management	2,8	17,4	15,6	23,9	40,4
8	Use in Microsoft Office 365 the OneNote application to take notes and collect information	4,6	14,7	16,5	24,8	39,4
9	Use in Microsoft Office 365 the Outlook application to send and receive e-mails	11,9	27,5	25,7	22,9	11,9
10	Use in Microsoft Office 365 the OneDrive application to host information in the cloud	6,4	18,3	15,6	33,0	26,6

Table 8. Level of skills you consider you have mastered

Among the level of appropriation of the competencies, according to the scale, it is evident that teachers have a higher percentage of appropriation in items 1, 5 and 6. In addition, the level of null appropriation has a higher percentage in items 3, 4 and 7. The Intermediate level of appropriation, with higher percentages, is found in items 2, 8, 9 and 10.

4.4. Institutionalized technological capital

The survey space to learn about the institutionalized technological capital of teachers was established from question 34 to 38.

In question 34, which asked about the level of skills in the management of office automation tools and Microsoft Office 365, the results obtained were as follows:

In question 34, before the Covid-19 pandemic, in your educational institution did you receive trainings on the use of technological tools? The response items were yes and no; with 31 % answering yes and 69 % answering no. In question 35 on Did you use platforms such as Zoom, Teams or Moodle before the Covid-19 pandemic? 69% answered Yes and 31% answered No.

In question 36, Do you have any type of certificate or academic degree on digital competencies in the use of ICT or management of computer tools, the teachers answered 55 % No and 45 % Yes.

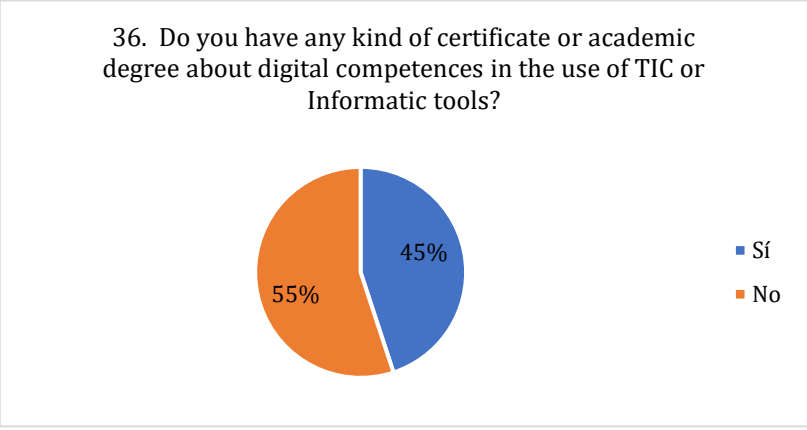

Figure 1. Do you have any type of certificate or academic degree on the use of ICT?

Questions 37 and 38 are related to each other. Question 37: "During the last 6 months, have you received any training on technological competencies in the use of technological tools? 72% answered Yes and 28% No. Next, in question 38, only those who selected the Yes option in question 37 had to answer and select the type of training, a total of 65 teachers mentioned that they were free, 18 teachers that they were paid courses, and 5 teachers that they were co-financed courses.

5. Discussion of the results

All of the teachers surveyed possess a certain form of objectified technological capital, which is mostly expressed in desktop computer, laptop, printer with scanner, smartphone and radio. For example, of the 109 respondents, 103 teachers answered that they have a laptop, 63 teachers have printer with scanner and 59 teachers have radio. However, this is determined by their socioeconomic status. Thus, for example, in question 21, which states: Was the technological equipment you use to teach your online classes provided by the educational institution where you work? In this regard, 57% of respondents answered in the affirmative, while 43% answered in the negative. We can infer that there has been limited support from the Ministry of Education towards teachers, even though the United Nations has urged States, stating that "teachers and students need free and open source technologies for teaching and learning" (UN, 2020, p.27).

The aspect of Understanding the role of ICT in educational policies of digital competencies established by UNESCO, guides that teaching practices are in harmony with educational policies. In this regard, question 11 of the instrument asked: How much time do you spend teaching your students through the use of digital platforms? Forty-eight percent of respondents answered that they spend 4 to 6 hours, 39% 40 minutes and 13% 1 hour. This evidences that only the teaching activity of 52 % of respondents is in accordance with the Educational Plan "we learn together at home" where the work time is regulated, establishing the following guidelines "(120) one hundred and twenty minutes for academic activities and (30) thirty minutes for homework or reinforcement, for students of EGB superior; 16 years old: two hours" (MINEDUC, 2020, p. 19).

The pedagogical and curricular aspect of the incorporated Technological Capital is oriented to "teachers integrating technologies, tools and digital content to enhance teaching" (p. 29). Thus, for example, question 15 asked; What types of educational platforms do you use to assign homework to your students? Thirty-nine percent of respondents use Google Classroom, 22% use Moodle, 19% use Microsoft Office 365, 15% use the institution's own platform and 6% use Edmodo. Likewise, question 16 asked; What types of educational platforms do you use to apply assessments to your students? 35% of respondents use Google Classroom, 22% use Moodle, 20% use the institution's own platform, 17% use the Microsoft Office 365 package and 6% use Edmodo. From the compared questions we can observe a standard deviation of 11 %, which shows a dispersion or variability among the respondents' answers. We can infer that teachers do not use digital platforms in a mechanical way, on the contrary, they do it according to the needs demanded by certain educational activities, such as evaluation and assignment of tasks.

Regarding the application of the embedded Technological Capital where "teachers use computers, mobile devices, accessible software, and networks, for teaching, learning and management purposes (...)" (UNESCO, 2019, p. 30). The teachers surveyed, in question 31 in item 17 that questioned about the use of email responded that 22.9% of respondents have an Advanced level, 26.6% Intermediate, 13.8% Medium, 22.9% Basic and 13.8% Null. Likewise, in item 7 of question 32 that asks about the design of interactive presentations,

9.2 % of respondents have an Advanced level, 17.4 % Intermediate, 26.6 % Intermediate, 33.9 % Basic and 12.8 % Null. Furthermore, in question 33 item 1 that refers to the Use of a word processor to create documents, 25.7 % of teachers have an Advanced level, 36.7 % Intermediate, 20.2 % Intermediate, 13.8 % Basic and 3.7 % Null. According to the descriptive statistical analysis of the three questions in correspondence to a total of 45 items, the average level of incorporation of these digital competences corresponds to 11.1 % Advanced, 20.4 % Intermediate, 21.8 % Medium, 27.1 % Basic and 13.1 % Null. Therefore, from the data discussed we can affirm that most teachers have a Medium level in terms of management and use of incorporated technological capital.

In reference to the Technological Capital in its institutionalized state, understood as the whole set of elements that cover the symbolic value of acquired knowledge. In question 36, which asked: Do you have any type of certificate or academic degree on digital competencies in the use of ICT or management of computer tools? 55% of teachers answered No and the remaining 45% answered Yes. Likewise, in question 37 which asked; During the last 6 months have you received any training on technological competencies in the use of technological tools? 72 % of teachers answered Yes and the remaining 28 % No. From which we can deduce that despite the mastery of digital competencies there is no correspondence with certificates and diplomas that accredit their incorporated technological capital.

6. Conclusions

Teachers possess Technological Capital. In their objectified state they possess to a greater extent the following forms of KT; desktop computer, laptop, smartphone, smart TV, printer with scanner and radio. However, it should be noted that most of these instruments have been acquired by teacher self-financing. In their embedded state, they have a Medium level of KT appropriation, which allows them to develop and apply the six ICT competencies in education to strengthen the teaching process. In their institutionalized state, more than half of the teachers have participated in training courses, obtaining a certificate accrediting their embedded knowledge. However, the training processes increased due to the demands caused by the pandemic. Before the pandemic, training levels were lower.

International organizations such as the UN, UNICEF, ECLAC and UNESCO have urged States to protect and increase public investment in education to guarantee the exercise of this right during the pandemic. In addition, by constitutional mandate, the Ecuadorian State through the Ministry of Education is obliged to generate public policies and services that guarantee quality education, among these public policies is the expansion of the technological capital of teachers with the perspective of applying ICT skills in a critical, reflective and dynamic way.

There are no antecedents in the country on specific studies of Technological Capital applied in education, therefore, this research constitutes an axis of discussion on Technological Capital, its appropriation, application and influence in the teaching-learning process. Finally, a new study on the appropriation of technological capital of teachers in educational institutions located in rural cantons and/or parishes is expected to be carried out in the medium term, where the data presented in this research can be compared with new results, in order to make visible a posteriori the development, levels and forms of appropriation of technological capital: objectified, institutionalized and incorporated.

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REVISTA CÁTEDRA

Diseño de una aplicación móvil educativa a través de app inventor para reforzar el proceso de aprendizaje en operaciones con números enteros

Design of an educational mobile application through app inventor to reinforce the learning process in operations with whole numbers

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Resumen

En la actualidad el desarrollo e implementación de nuevas tecnologías se ha vuelto necesario en todos los ámbitos, en la educación nace con la obligación de utilizar nuevas herramientas que ayuden a potenciar el aprendizaje. En esta propuesta se analiza el impacto de una aplicación móvil educativa diseñada en la plataforma App Inventor, que busca ayudar a reforzar el proceso de aprendizaje de operaciones de números enteros. Se aprovechó la facilidad de manejo que presenta la plataforma online gratuita, para estructurar de manera llamativa todo el contenido acorde al nivel académico del usuario.

Así, se desarrollaron varias pantallas en la aplicación que lleva por nombre MatEstudio, cada una de estas pantallas sirven para fortalecer el proceso de aprendizaje. Estas pantallas se conforman por teoría, simuladores y un juego que en conjunto ayudan al razonamiento y retención del conocimiento. Se determinó el nivel de conocimiento teórico matemático y en Tecnologías de la Información y Comunicación de estudiantes de Educación General Básica. Posteriormente se aplicó una encuesta, en la cual, con base en los resultados obtenidos, se pudo evidenciar que se presenta una problemática para la correcta comprensión de la teoría y práctica de operaciones con números enteros. De esta manera se pudo concluir que es factible la implementación de una App Educativa creada en App Inventor para reforzar el proceso de aprendizaje de operaciones con números. No obstante se presentan varias limitantes entre las principales el acceso a la red y la mala utilización del programa por parte del usuario.

Palabras clave
App Inventor, gamificación, aprendizaje, números enteros.

Abstract
At present the development and implementation of new technologies has become necessary in all areas, in education it is born with the obligation to use new tools that help to enhance learning. This proposal analyzes an educational mobile application designed on the App Inventor platform, which helps to reinforce the learning process of whole number operations. The ease of use of the free online platform was used to structure all the content in a striking way according to the academic level of the user. Thus, several screens were developed in the application called MatEstudio, each of these screens serves to strengthen the learning process. These screens are made up of theory, simulators, and a game that together help reasoning and knowledge retention. The level of theoretical mathematical knowledge and in Information and Communication Technologies of students of Basic General Education was determined. Subsequently, a survey was applied, in which, based on the results obtained, it was possible to show that there is a problem for the correct understanding of the theory and practice of operations with integers. In this way, it was concluded that it is feasible to implement an Educational App created in App Inventor to reinforce the learning process of operations with numbers.

Keywords
App Inventor, gamification, learning, whole numbers.

1. Introduction
The creation of mobile applications through App Inventor for education has grown exponentially in recent years, leaving a little aside the use of a large number of books or other materials. Regarding the platform, Almaraz et al. (2016) mention "App Inventor technology has been revealed as an accessible and powerful tool to become familiar with the creation of mobile applications. Its potential for the creation of didactic content applications is remarkable" (p. 83). Being a free website, it is available to the entire educational community, it presents an intuitive management structure that helps for the publication of various applications in different areas or purposes. The App Inventor website, through its interface, creates files with apk extension (file format for a specific system or program) based on the Android Operating System. To complement, Borrego (2012) mentions that "an Android OS is present in mobile devices such as smartphones, watches, cars, tablets and televisions" (p.2). Being present in the different devices, it results

a point in favor since the great part of users has this type of software in their mobile. Thus, Statista (2018) complements that "Android is consolidated as one of the most used operating systems in the world for smartphones with more than 2000 devices in the world and more than three million applications" (p.1). In general this operating system is more accessible compared to IOS and Microsoft, due to the large number of free applications that can be found.

It is important to adapt new learning methodologies based on mobile applications, due to the fact that a basic level of knowledge is evident with respect to the area of Mathematics. Therefore, EL UNIVERSO (2019) writes "70.9% of students in Ecuador did not reach level 2 in Mathematics, categorized as the basic performance level" (p.8). The statistics demonstrate a scarce knowledge of Mathematics basics in students, aspects that will later present learning difficulties for much more complex elements. To complement the statistics of the PISA-D test conducted in 2018, Radio Huancavilca (2019) writes "In Ecuador, 49 % of students reached the minimum level of Reading Proficiency, 29 % in Mathematics and 43 % in Science" (p.1). We observe that the level shown by the students is worrisome, this in three subjects that are essential for the student's future.

The idea of this research stems from the need to apply new learning methodologies focused on the use of mobile applications. Thus, gamification is included as a point of evaluation and reinforcement of knowledge. To deepen the term, Gaitán (2013) defines "Gamification is a learning technique that transfers the mechanics of games to the educational-professional field in order to achieve better results (p.1). By presenting a dynamic mechanics, the attractiveness of the mobile application is increased, as well as its purpose is enhanced.

This article is structured as follows. In section 2 with previous works obtained based on the bibliographic research of web sites. Section 3 presents concepts related to the present study. Section 4 shows the methodology implemented for the correct development of the research work and the results of accessibility to mobile devices and applications by students. Section 5 shows the technological proposal. Finally, section 6 closes with the conclusions obtained based on the results.

2. Related work

A study in 2015, at the University of Salamanca "Spain" proposes a teaching innovation focused on the application of App Inventor for the creation of didactic applications for mathematics. In the results obtained from 17 students it is verified that 64% feel attraction for the subject and 41% ensure a change in their attitude towards mathematics. The authors conclude that App Inventor technology is accessible and powerful for the creation of didactic content applications that help to improve the attitude and learning of students (Almaraz, et al. 2015).

A technical project in 2016, proposes the design and implementation of a mobile application that facilitates the language learning process of children with Down Syndrome of the FASINARM Foundation of Guayaquil. Acceptance tests were conducted by the children for the application where the results were totally positive. According to the results obtained, the authors conclude that the application has been beneficial for the children of the initial level II, since it has favored them in the learning process (Aranda and Samaniego, 2016).

In 2017, a research is produced at the Polytechnic University "Venezuela" to observe the feasibility of implementing the App Inventor tool for learning algorithms, the study is conducted taking into account students of the Computer Engineering career. The results corresponding to the learning need show that the way of demonstration and the scope of

learning are important for the student. Likewise, in the Table of devices most used by the student, the cell phone is highly weighted. Therefore, the authors conclude that the App Inventor tool is feasible to use as a learning tool within the curricular unit (Jiménez and Larrea, 2017).

An investigation in 2018, seeks introductory learning of computer programming using App Inventor in an Institute in Guatemala. A diagnostic evaluation was performed to 18 students where 4 different situations were presented where with 33% is the highest value achieved, after taking the course the valuation obtained is 55% evidencing an improvement. From the results the author concludes that the introductory course using App inventor has favored the development of critical thinking and reasoning in students (Valdez, 2018).

In 2018, a teaching innovation project at the University of Cadiz "Spain" develops the App VectorialZ for interactive visualization of graphics created with software based on App Inventor. Acceptance aspects were collected through a survey of 24 students, where the results were positive in acceptance and usefulness, in addition it is evident that most users entered the App outside class hours. The authors conclude that the evaluation of the VectorialZ App is promising since most students highlighted that it facilitates the learning of content (Listán, et al. 2018).

In 2018, in Colombia, a virtual object for learning operations addition and subtraction of integers is presented. The tests conducted had two groups, the first one worked with the traditional learning model presenting poor results, while the second group used the virtual learning object, obtaining a better weighting. Based on the results, the author concludes that the virtual object obtained better academic results both in the understanding of the operations and in their use for the solution in similar situations (García, 2018).

In 2018, a learning proposal for students of the 21st century, a collaborative project based on App Inventor, is presented at the Public University of Navarra "Spain". In the survey of 42 students, 40% see programming using this tool as difficult, also 95.2% believe that it is important to make new versions of mobile applications. The author concludes that the project meets the expectations, since the use of the mobile device helps the student to create active learning fostering real knowledge away from passive learning (Sanz, 2018).

In 2019, a technological tool for the playful learning of mathematics is proposed at the Universidad Tecnológica Indoamérica "Ecuador". Through the survey conducted to students it is observed that 65% show low academic performance in mathematics and 85% are open to learning through the mobile application presented. Through the results the author concludes that the application meets the objectives since it enhanced the significant development and in turn strengthened the acquisition of skills with performance criteria (Pérez, 2019).

3. Related Concepts

3.1 Learning

Learning is interrelated with the term teaching, since it is broken down in one way or another from it. To complement, Sanchez (2003) defines learning as "a process of an extremely complex nature, whose essence is the acquisition of new knowledge, skill or ability" (p. 9). This acquisition of knowledge is carried out through different means, with the main objective that it is not a passing retention. This knowledge, in order to be considered learning, must help in the future to solve the problems of everyday life.

3.2 Meaningful learning

Currently, meaningful learning is very important for human beings, for the creation and construction of new knowledge. According to Ausubel (1983), learning is meaningful when:

> Content is related in a non-arbitrary and substantial (not verbatim) way to what the learner already knows. By substantial and non-arbitrary relationship it should be understood that the ideas are related to some specifically relevant existing aspect of the learner's cognitive structure, such as an image, an already meaningful symbol, a concept or a proposition (p. 2).

When mentioning a cognitive structure, it refers to the understanding and memory that make up the structure of a person's knowledge. That is to say, the ideas jointly related, in reference to a knowledge and knowledge of a certain subject or concept.

3.3 Mobile Application

A mobile application (App) is any program that can be found on a mobile device or tablet. In this regard, Enriquez and Casas (2013) point out that:

> Mobile application is software developed for mobile devices. Mobile refers to being able to access data, applications and devices from anywhere and at any time. This type of applications are developed taking into account the limitations of the devices themselves, such as low computing power, low storage capacity, limited bandwidth, among others (p.35).

Each of the mobile applications installed on a mobile device has a series of requirements, depending on the purpose of the program. The requirements are based on the storage size that varies according to the amount of graphic content such as: images, sounds, videos, among others.

According to Artica (2014), he mentions that: "applications are born from some specific need of the users, and are used to facilitate or allow the execution of certain tasks in which an analyst or a programmer has detected a certain need" (p.3). Each of the needs serves to facilitate the fulfillment of an activity and based on their purpose Medina (2018) encompasses them as follows as shown in Figure 1:

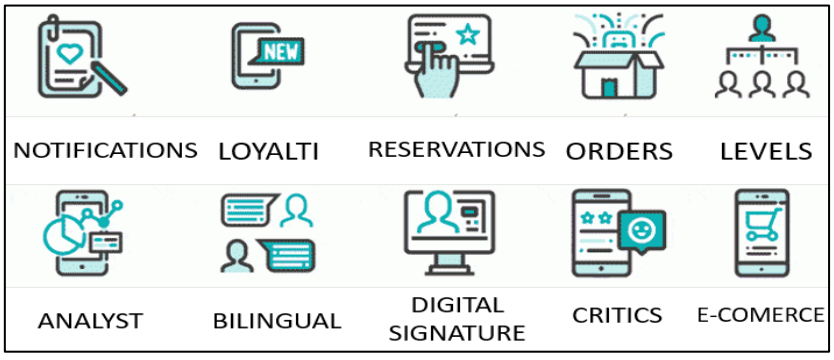

Figure 1. Types of mobile applications (Medina, 2018, p. 1).

All mobile applications comply with specific features and functions according to their purpose of creation. Each one of them satisfies the need presented by the user in various fields. Among the group of applications, the use of mobile applications for purposes such as: entertainment, work, leisure, communication, health, etc., is reflected in the use of mobile applications.

3.4 App Inventor

It is a free web space that encourages content creation. The official MIT App Inventor website (2012) defines it as "a visual and intuitive programming environment that allows everyone, including children, to create fully functional applications for smartphones and tablets" (p.1). With the above mentioned, it is known that App Inventor[The access address to App Inventor is: http://ai2.appinventor.mit.edu] is simple to use and helps in designing Android applications for different purposes of everyday life.

These purposes can be for work, leisure, news, education, among others, depending on the purpose sought by the creator. In this regard, Posada (2008) mentions that "it offers its users an interesting technological solution with which to create Apps for Android devices in a simple way" (p.3). This web media, being a new digital gateway for children, youth and adults, wants to eradicate the consumption of technology and seeks to promote the creation of technology.

The creation and innovation of technology helps the user, since it benefits the logical thinking of the creator at the time of the design of each of the applications. These Apps being compatible with Android can be easily installed on any mobile device that has this operating system.

3.5 Gamification

Within the educational field, the application of new methodologies to improve student learning can be evidenced, one of them is gamification. A term that Gaitán (2013) defines as:

> A learning technique that transfers the mechanics of games to the educational-professional environment in order to achieve better results, either to better absorb some knowledge, improve some skill, or reward specific actions, among many other objectives (p.1).

In view of the above, several elements can be used as an educational resource to make games that help stimulate the student to solve problems and build critical thinking through a problem of everyday life.

3.6 Whole numbers

Integers are born, by the idea of facilitating calculations with respect to numbers that are below zero and obtain more accurate results to reality. According to Rumiche (2019), he defines that "the need to represent quantities less than zero, and to make subtraction always possible motivated the creation of the set of integers (Z)" (p.17). Thus, Z integers are made up of the following components and symbols: positive integers (), negative integers () and zero. Once the learning definitions are clear, the following is an orderly list for the correct learning cycle of integers.

1. Preparation of basic topics for the study of integers.
2. Provide resources and materials containing theory and properties with integers.
3. The student reviews and grasps each of the operations presented.

4. Assimilation of the information and putting it into practice in exercises and application problems.

In each of the stages each educational actor plays an important role, in the first instance the teacher who is the one who guides so that they comply with what has been proposed. On the other hand, the student is the one who receives each of the knowledge, to later put it into practice. This is achieved by means of educational resources, which serve as a bridge for the teacher-student relationship.

4. Methodology

The research work was carried out using the methodology described below.:

- **Approach:** The research work was carried out through a mixed approach (qualitative and quantitative), due to the identification of the evident problems in the learning of Mathematics, specifically in the resolution and comprehension of operations with integers. All this information was based on measurable data collected in the educational institution through an instrument previously validated by research experts. To complement according to Hernandez (2014) "The mixed approach constitutes a possible choice to face research problems and is equally valuable. It is, so far, the best way designed by mankind to investigate and generate knowledge" (p.2).
- **Type of research**: The project will use a field research; through, the collection of data coming from the surveys elaborated in the area of Mathematics. This instrument is directed to students in the eighth grade of General Basic Education at the Eugenio de Santa Cruz y Espejo Basic Education School.
  Documentary research will also be used for the elaboration of the theoretical framework, based on the collection of information. All data will be selected through a search in different documentary sources, which will serve to complement the information of the object of study.
- **Level:** Hernández (2014) mentions "exploratory studies are carried out when the objective is to examine a topic or research problem that has not been studied much, of which there are many doubts or which has not been addressed before" (p.91). Thus, for the elaboration of the research work, the exploratory level was chosen, since mobile applications were little known and explored in the educational institution. Specifically, their use as a didactic resource for learning mathematical operations with integers through interactive and innovative activities.
  At the same time, the descriptive level was used, allowing to appreciate the real state of the eighth grade in their mathematics education, especially in the understanding and resolution of operations with integers. This assessment helped to examine the educational environment, the didactic resources available in the institution and some of the learning difficulties. And thus find a solution through the design of an educational mobile application through App Inventor; which serves as an innovative pedagogical tool for the student. Based on the aforementioned Hernández (2014) notes that "with descriptive studies we seek to specify the properties, characteristics and profiles of people, groups, communities, processes, objects or any other phenomenon that is subjected to analysis" (p.92).
- **Technique:** The survey was chosen as the technique for obtaining information and data for this research. This survey will be conducted online, with the help of the online platform Google Forms.
- **Instrument:** The questionnaire was conducted taking into account factors of composition and coherence within the mobile application. Based on the above, the

questionnaire presented contains 15 questions, where your choice is composed of 2 answers, one positive and one negative. In which the options YES APPLIES or NO APPLIES can be observed, according to the user's perspective.

- **Validity:** For the validity of the data collection instrument, we had the help of two teachers from the Faculty of Philosophy, Letters and Educational Sciences of the Pedagogy of Experimental Sciences and Computer Science career. A matrix was used to analyze the correspondence, quality and language of each of the items.

4.1 Population and sample

In the present research project, the selected population is composed of eighth grade students of the Eugenio de Santa Cruz y Espejo School of Basic Education. Table 1 shows exactly how many students were selected for the survey.

Population	Quantity
Eighth Grade EGB "A	33
Eighth grade EGB "B	31
Eighth grade EGB "C	30
Total	94

Cuadro 1. Población Octavo EGB

4.2 Results

The results presented in the statistical graphs in Figure 3 correspond to the first five items of the questionnaire applied. The questions are focused on the ease of use of the educational mobile application from the user's point of view.

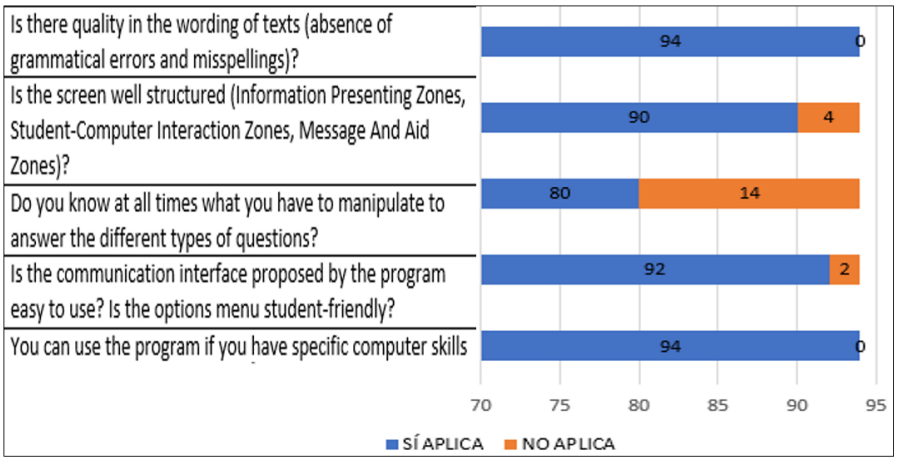

Figure 2. Program utilization results

Based on the results of the first section, there are positive aspects regarding the ease of manipulation of the tool by the student. Likewise, it is established that the design and its components are mostly very well structured, since they allow its handling to be intuitive and interesting for the student.

Figure 4 shows the next block of questions, related to aspects of visualization within the educational mobile application. This has to do with elements, shapes, sizes, colors, among others that make up the virtual environment of the program.

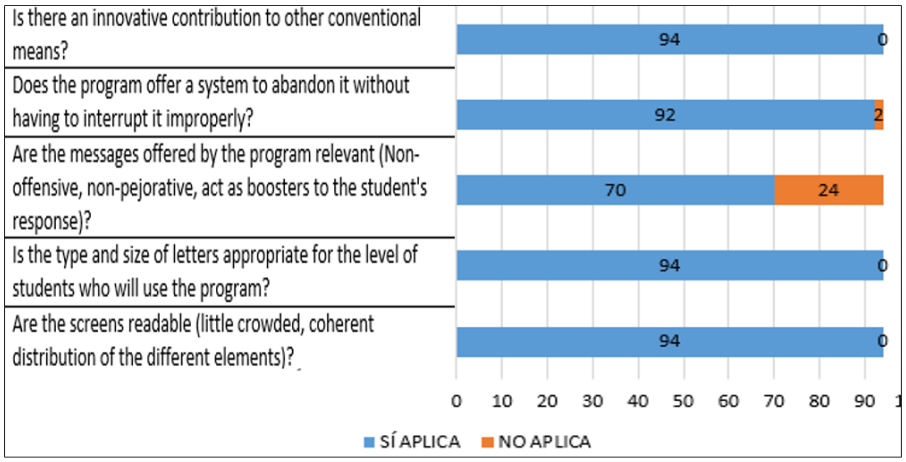

Figure 3. Display results per screen

The results show mostly positive responses regarding the conformation and structuring of the content and its form within the Mobile App. Only a small part of the population does not consider the relevance of some elements, as well as suggesting the inclusion of other action buttons for easier navigation between screens.

In the last section of the questionnaire, Figure 5, we found items that were directed to the interaction that exists between the user and the application as such. This in order to demonstrate that learning will not be fleeting, but dynamic and innovative.

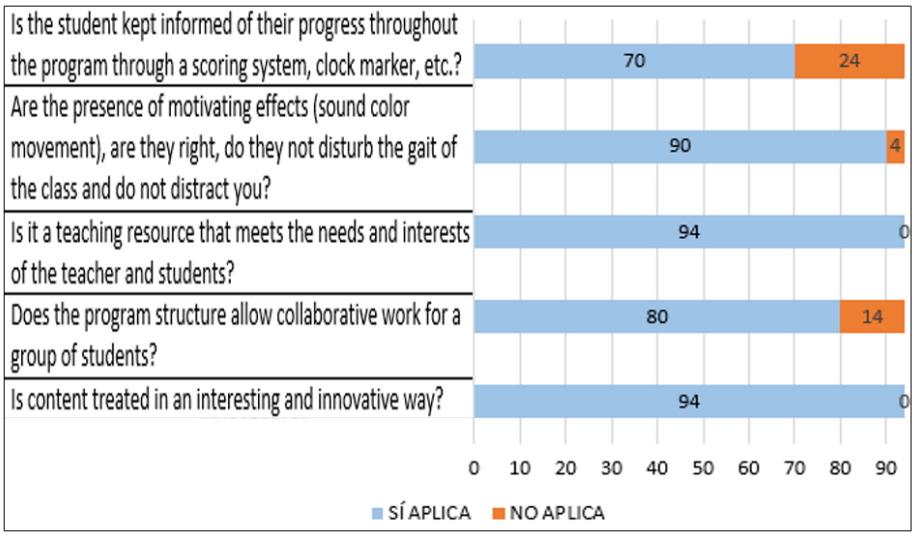

Figure 4. Results of interaction forms

Based on the results obtained in the main questions of the survey, it is evident that most of the students' answers favor the technological project. Thus, taking into account all the users' opinions, an educational mobile App has been built to meet the needs of the level of knowledge to which they belong. Contributing with a memory game, which allows the student to put into practice the knowledge studied in the educational mobile application.

5. Implementation

For the correct installation and operation of the MatEstudio application, the mobile device must have the minimum requirements detailed in Table 3. This is to avoid failures in the course of program operation, as well as visualization failures in the final design in some devices that do not have these characteristics.

Operating System	**Android Version 7 or higher**
Storage	**12.5 MB of free memory**
RAM	**1.6 Gb or higher**
Display	**640 x 1136**

Table 3. Required Program Components

To access the application, the MatEstudio.apk file was uploaded to the Google Drive storage system as shown in Figure 6. Through the Internet, the user is directed to the corresponding file storage link 1.

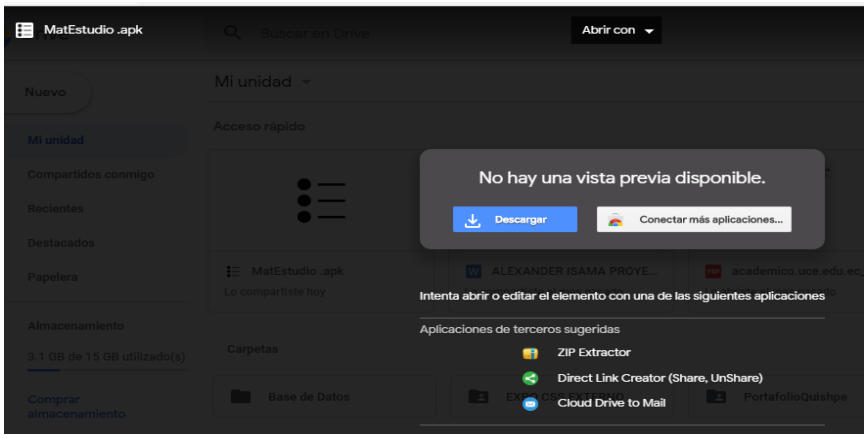

Figure 5. Program download site

The application as such presents different screens, all of them eye-catching and with dynamic colors to attract the user's attention. Figure 7 shows the above mentioned, we have the Welcome screens and the menu where the user decides which of the operations he/she wants to enter to see its content. As can be seen, there are 8 screen options, which contain each of the essential mathematical operations, as well as a general introduction to the subject and finally the game mentioned above.

Figure 6. Welcome Screen and Menus

Next, when you are already inside any operation, there are submenus that present theory, properties and simulators of the indicated operation. Figure 8 shows the content and the operation simulators where the knowledge already studied can be put into practice.

Figure 7. Theory and Simulators Screen

Finally, in order to put into practice the knowledge seen in each of the screens, a memory game has been included. Figure 9 shows that it is composed of 16 action buttons in which the student has a time limit to solve it.

Figure 8. Game Screen

The new system has a memory game screen in order to better stimulate and motivate the use of the mobile application to reinforce the learning of integers. This section contains part of the theory of the different mathematical operations, but which are put into practice at the time of solving a proposed exercise.

6. Conclusions

With the present research it has been possible to design in an innovative way a new technological educational tool, made up of dynamic elements within an educational environment that help learning. In addition, it was possible to verify the economic and technological feasibility for the study of operations with integers through an educational mobile application. For this purpose, several screens with attractive content and colors were designed, as well as the inclusion of a game within the same program in order to meet all the needs of the student, according to the level of education to which he belongs.

The use of mobile applications is currently in full trend, the possibility of taking advantage of each of them depends on the good management of the same made by each user. This following tutorials and user manuals, to make the most of each of the operations that allow us to perform this type of mobile programs.

Mobile applications, like any other created program, can bring variants and improvements with the passing of time. Based on follow-ups and evaluating the results of use, changes can be made in the structure as well as in the content of the application, in order to provide a quality product that can be expanded to more groups of users.

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REVISTA CÁTEDRA

Percepción sobre los libros de texto en la enseñanza-aprendizaje de la Matemática

Perception about textbooks in math teaching-learning of Mathematics

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Resumen

Los libros de texto son un recurso necesario en el proceso de enseñanza-aprendizaje de las ciencias y deben considerar, entre otros, a los elementos curriculares: objetivos de

aprendizaje, contenidos matemáticos y evaluación. Esta investigación tiene como propósito determinar el nivel de satisfacción que el desarrollo de estos elementos genera en estudiantes y docentes, expresados en estos libros que se utilizan en el sistema educativo ecuatoriano. Cabe recalcar que el Ministerio de Educación dota de manera gratuita este material escolar a todas las instituciones públicas del país y, por lo tanto, motiva a investigar sobre su aplicación y uso. Este estudio tiene enfoque cuantitativo y es de nivel exploratorio y descriptivo, por lo que se usó un instrumento de observación para la recolección de datos. Los resultados se expresan por niveles de escolaridad tanto de la Educación General Básica subnivel Superior como del Bachillerato General Unificado y por los elementos curriculares estudiados. Finalmente, se concluyó que los objetivos propuestos para el Bachillerato General Unificado tienen un nivel de satisfacción mayor que los declarados para la Educación General Básica, asimismo, se concluyó para ambos niveles que existe un mediano nivel de satisfacción de los elementos investigados en los libros de texto, lo que significa que los estudiantes que los utilizan no están orientados para continuar aprendizajes más complejos.

Palabras clave

Currículo, enseñanza-aprendizaje, evaluación, Matemática, objetivos de aprendizaje, textos escolares.

Abstract

Textbooks are a necessary resource in the science teaching-learning process and should consider, among others, the curricular elements: learning objectives, mathematical content and evaluation. The purpose of this research is to determine the level of satisfaction that the development of these elements generates in students and teachers, expressed in these textbooks used in the Ecuadorian educational system. It should be noted that the Ministry of Education provides this school material free of charge to all public institutions in the country and, therefore, motivates research on its application and use. This study has a quantitative approach and is exploratory and descriptive, so an observation instrument was used for data collection. The results are expressed by levels of schooling of both the General Basic Education sub-level and the General Unified Baccalaureate and by the curricular elements studied. Finally, it was concluded that the objectives proposed for the Unified General Baccalaureate have a higher level of satisfaction than those declared for General Basic Education. It was also concluded for both levels that there is a medium level of satisfaction with the elements investigated in the textbooks, which means that the students who use them are not oriented to continue with more complex learning.

Keywords

Curriculum, evaluation, learning objectives, Math, school texts, teaching-learning.

1. Introduction

The evaluation applied to the country's students indicates that in the subject of Mathematics they do not reach the minimum levels of approval, in relation to the standards proposed by the Ministry of Education (MINEDUC). As Puente states, the results of the Ser Bachiller tests in 2015-2016, applied to more than one hundred thousand students, were: Mathematics 743 points, Language and Literature 786 points, Natural Sciences 771 points and Social Studies 856 points (Puente, 2016, p. 1). Then, in view of such results, it is worth asking: what factors influence these low scores? The answers are multiple and of diverse nature: social, cultural, economic, school, family, personal, among others. In addition, they are directly

related to aspects of the teaching-learning process: the limited education and training of teachers in mathematics and didactics of mathematics, the resources available do not contribute to the development of the contents of the subject, students are fearful and demotivated, the classroom educational processes are poorly conceived and applied, the evaluation instruments are not pertinent, among many others.

The teaching-learning process demands the use of didactic resources, of the many that exist. Despite the variety of resources and technological advances linked to the educational field, especially in the area of Mathematics, textbooks continue to be an indispensable support during the process. "The textbook is an important resource to carry out the mathematics curriculum and didactic programming effectively, but it is not the only one" (García, 2014, p. 1). Teachers use textbooks to develop the contents of the subject that are organized in the curricular grids of each school year, as well as students have the texts delivered free of charge and must be used in a mandatory manner in the development of Mathematics classes.

In terms of structure, the textbooks delivered to all students at the levels of Educación General Básica (EGB) Superior and Bachillerato General Unificado (BGU) present the following characteristics: 2016 editions, their authorship is the responsibility of MINEDUC, they are organized in thematic units and have an average number of pages of 283 in EGB Superior and 255 in BGU. Finally, they consider the title page, table of contents, contents, glossary, bibliography and webgraphy. The revision of the textbooks was carried out by the Salesian Polytechnic University. The synopsis of all textbooks reads as follows:

> This textbook that you have in your hands is a very important tool for you to develop learning in the best way. A textbook should not be the only source of research and discovery, but it is always a good ally that allows you to discover for yourself the wonder of learning. The Ministry of Education has made a curricular adjustment that seeks better learning opportunities for all students in the country within the framework of a project that favors their full personal development and their integration into a society guided by the principles of Good Living, democratic participation and harmonious coexistence (Ministerio de Educación del Ecuador, 2016, p. 1).

Under these approaches, the following research questions are formulated: in what way are the textbooks used by students of the EGB Superior sublevel and BGU structured, and do the textbooks for learning Mathematics satisfy and are they coherent between objectives, contents and evaluation? In order to answer these questions, the general objective of the research is to determine the level of satisfaction generated by the development of objectives, contents and evaluation expressed in the textbooks used in the EGB Superior and BGU of the Ecuadorian educational system. From this, the following specific objectives are broken down as follows:

1. To identify the curricular elements: objectives, contents and evaluation, applied in the textbooks of both the EGB Superior and BGU levels.
2. To establish how mathematical contents are developed in the textbooks.
3. To describe the level of satisfaction established, by years, in the curricular elements formulated in the textbooks.

Despite the educational reforms of recent years, Fernández and Caballero emphasize that the use of mathematics textbooks is and will continue to be a widespread practice in classrooms. Its grounding in the student's experiences and its linkage with advances and

innovations in the scientific field is imperative (Fernández and Caballero, 2017, p. 202). Therefore, analyzing the learning objectives, contents and evaluation of this resource allows determining whether it meets expectations, so that students have a methodological support to achieve knowledge and develop mathematical reasoning and learning in relation to the level of schooling and its respective sequentiality.

According to Fernández and Caballero, a textbook does not replace the teacher, does not limit the development of methodologies and does not turn learning into a process of repetition and memorization (Fernández and Caballero, 2017, p. 205). On the contrary, diversifying the use of didactic resources in the teaching-learning process of Mathematics contributes to the fulfillment of the expected achievements and to face the current demands of 21st century education. From this perspective, research on mathematics textbooks requires deepening the objectives, contents and evaluation of learning, approaching the study from different disciplines and contexts, generating spaces for discussion and orienting this resource towards an interdisciplinary approach.

The present research is developed with the following structure: review of the literature, where it is based on Mathematics textbooks, specifying their learning objectives, mathematical contents and evaluation; methods and materials, detailing the design of the study and its data collection instrument; results and discussion, grouped by the curricular elements named as criteria (objectives, contents and evaluation) and levels of schooling (EGB Superior and BGU); and, finally, the pertinent conclusions are established.

2. Literature review

The Constitution of the Republic of Ecuador states that public education is free and that it is mandatory for all children and adolescents to attend and complete General Basic Education and High School (Constitution of the Republic of Ecuador, 2008, Article 28). With this decision, among other measures, textbooks are provided free of charge for the fundamental areas: Mathematics, Language and Literature, Social Sciences and Natural Sciences, so that textbooks have become widespread at these levels. Moreover, these texts play different roles: object of study, reference material, record of student activities, collection of proposed exercises and problems to be solved. Choppin (1993) considers the textbook to be:

> At the same time, it supports knowledge in that it imposes a distribution and a hierarchy of knowledge and contributes to forging the intellectual scaffolding of both students and teachers; it is an instrument of power, given that it contributes to the linguistic standardization of the discipline, to cultural leveling and to the propagation of dominant ideas (pp. 165-185).

The textbooks delivered for the teaching of Mathematics must also comply with the orientations expressed in the New Curriculum 2016 for EGB and BGU. Textbooks, for Nortes and Nortes (2011), "are aimed at developing the contents established by the educational decrees corresponding to the different levels of compulsory education [and conclude that] they have played a preponderant role in the teaching-learning process of mathematics" (pp. 68-69). Similarly, García (2014) expresses that "the mathematics textbook was and still is considered as one of the most important resources for the teaching and learning of mathematics" (p. 4).

Also, it is worth taking into account that Unesco, through Flotts et al. conducted a study that compared and analyzed the Mathematics curriculum documents of the countries participating in the Third Regional Comparative and Explanatory Study (TERCE) and other

inputs, such as textbooks (Flotts et al., 2016, p. 26). Also, it allows recognizing the development of problem-solving skills as a central axis of mathematics education.

According to Standaert and Troch (2011), "a good use of the textbook, moreover, depends, to a large extent, on the attitude of the teacher and the starting situation of the students" (p. 108), so an adequate classroom process will start with the review of the prerequisites and the motivation of the participants. Textbooks become important when they, by themselves, captivate students to use them.

With regard to the characteristics of a good textbook, Creemers mentions the following:

1. It provides practical exercises that respond to the objective of the subject of study.
2. The subject matter is not overloaded.
3. The contents respond to the teaching objectives and are applicable to real life situations.
4. The objectives are clearly stated, organized, and inform the students about what they are expected to learn.
5. The subject matter is explained in a clear and structured way and is responsive to the objectives. In addition, it is presented in a logical sequence, ranging from the simplest to the most complex.
6. They use advance organizers (a notion introduced by Ausubel), which is an explanatory element that appears at the beginning of each new chapter and connects the notions already studied with those that appear next.
7. They provide material for the monitoring and evaluation of the student's progress.
8. They demand feedback in a systematic way.
9. They allow the effective use of class time.
10. They promote student motivation.
11. They provide material for formative evaluation (Creemers, 1991, p. 48).

2.1 Learning objectives

The objectives proposed in textbooks are purposes that are formulated to determine what will be done or attempted in class, in other words, they are "aspirations or intentions that can be very interesting and that surely express the need for the student to acquire certain knowledge, abilities, attitudes and/or skills" (Salcedo, 2011, p. 117). The learning processes that are applied require the use of textbooks that support the achievement of learning objectives; therefore, Van Bruggen (1987) states that, "the clearer the central objectives and content, the easier it will be to measure the impact of textbooks on learning achievement" (p. 133).

Consequently, school mathematics focuses on privileging its formative aspect. Also, "objectives comprise the experiences that learners should gain in all learning opportunities offered. They influence the selection of content, methodological strategies and resources, and the evaluation of learning" (Araujo, 2009, p. 9). Thus, textbooks should be considered as support resources that serve to reach the achievements that students should demonstrate at the end of a class.

In the Unesco report, through Flotts et al. it is expressed that an objective of mathematics education is to train people capable of reasoning logically and thinking critically, who master certain knowledge or contents proper to this discipline and are able to apply them in everyday life (Flotts et al., 2016, p. 26). In the educational stage of EGB sublevel Superior and BGU, adolescents must appreciate and understand the significance of numbers and use them properly, as well as the different purposes they have in everyday life. Numerical significance is derived from experiences and actions on real situations, so that,

progressively, students use numbers to quantify, measure, indicate, order, locate, among others; and develop numerical operations to solve problems of this nature.

2.2 Mathematical contents

Textbooks in Ecuador are didactic resources of almost obligatory use by the main actors involved in the teaching-learning process. Parcerisa argues that textbooks condition the type of teaching that takes place when they are used in a closed manner and subjecting students to the learning contents and methodologies of the National Curriculum preset in the document (Parcerisa, 1996, p. 35). Velásquez (2019) according to studies conducted on school texts, adds the following.:

> Students, teachers, parents and representatives give them a position of high esteem. However, this "bookish" dependence is worrying, because they assume the almost total veracity of the contents and passively presume the good pedagogical and didactic intentions of their mentors (p. 19).

On the other hand, according to Eyzaguirre and Fontaine (1997), "the methodology and contents of textbooks can play a very relevant role if we want a reasonable, realistic, rapid and wide-ranging educational reform that is compatible with a pluralistic society" (p. 340). Thus, textbooks for learning mathematics must incorporate subject contents that follow a logical sequence, both theoretically and didactically.

Therefore, relationships and connections must be established between elements, actions, notions and concepts, which will make it possible to know the conditions that must be met to develop the ability to sequence and understand the facts. In the teaching-learning process, Obaya and Ponce point out that the didactic sequence guides and facilitates practical development. It also encourages research as a methodological tool that allows the construction of concepts, procedures and attitudes as a flexible proposal that can and should be adapted to the concrete reality (Obaya and Ponce, 2007, p. 19).

2.3 Evaluation

Evaluation is defined as "a control phase that aims not only at reviewing what has been done but also at analyzing the causes and reasons for certain results" (Duque, 1993, p. 167). Furthermore, "evaluation acquires meaning when it is able to generate information that serves to make decisions and illuminate improvement actions" (Flotts et al., 2016, p. 9). In the educational field, formative assessment and summative or certifying assessment coexist, both of which are linked to the learning that takes place in the classroom. Arribas (2017) defines the following:

> Evaluation in its pedagogical, formative dimension, as one more element of the teaching-learning process, is more clearly manifested when the evaluation does not entail a grade or when it does not have repercussions beyond the assessment of the progress of the person concerned (p. 383).

Consequently, formative evaluation is characterized by being orienting, regulating and motivating; it is inclined to assess the student's formation and his way of learning. Its trajectory is monitored, from its starting point to its point of arrival, in order to improve the educational process with respect to the data acquired; it does not require a qualification to be assessed.

For Arribas, evaluation in its summative or certifying dimension requires ascertaining the degree of achievement of the learning objectives by the student, in order to endorse, classify,

review, retake and reflect based on the results obtained (Arribas, 2017, p. 384). Contrary to formative assessment, summative assessment necessarily has a grade to determine the level of achievement obtained in each learning process.

The correspondence and complementarity between formative and summative evaluation make the evaluative process systematic, participatory, continuous and interpretative, qualitatively and quantitatively. In this regard, Villardón (2006) considers that:

> Assessment in its summative function as competency assessment and formative assessment as assessment for the development of competencies [are] two complementary and necessary approaches to the assessment of learning, which lead to a global conception of what assessment should be [...] as an element of competency training (pp. 61-62).

A textbook, for Campanario, is a source of information, tasks, questions and evaluation exercises, to be reviewed by teachers and students in and out of class (Campanario, 2001, p. 352). Similarly, García (2014) argues that "the main uses that teachers give to the books run between a source of information to prepare, teach and evaluate classes and as a database with tasks and exercises that students have to solve" (p. 10). In mathematics textbooks, the evaluation of learning takes on greater force in the proposed activities developed by students.

Specifically, the approach and statements of the problems found in mathematics textbooks influence the student's perception and understanding to solve them, as well as the teacher's perception and understanding to explain them. Fernandez (2010) highlights the consequences of having incorrectly stated problems in the educational task in the mathematics classroom.

> When the writing of a problem situation is presented in the classroom, the student takes as a linguistic model what is expressed, retains it and associates it later with the solution content of the situation. The rigor, precision and clarity of the language presented to the student are of exaggerated importance. The problems that are read throughout the school activity are many. And many of them contain semantic, syntactic and mathematical incorrectness in their statements. We read both what is well and badly written, and the interpretations are not so much subject to the meaning of its expression, but to the intuition of that meaning. The fixation of clear ideas cannot have a fragmentary character, but a systemic, integral character. The correct verbal formulation of the problem must be elevated to a priority level, taking excessive care in the presentation of its information (p. 42).

Assessment activities should be designed to show that students learn, understand the concepts and develop their mathematical skills and abilities, such as demonstrating, applying, inferring and formulating. Correctly stated problems, with a good literary and mathematical language, allow measuring, qualitatively and quantitatively, that students acquire and develop the mathematical contents included in the textbooks and that they achieve the learning objectives.

3. Methods and materials

The research has a quantitative approach and the results will be expressed in frequencies and percentages. In addition, it is a descriptive study, so it will detail the relevant components of the didactic development of mathematical contents in the textbooks used by teachers and students of the upper sub-level of EGB and the three years of BGU in Ecuador. For this purpose, an extensive bibliographic and documentary research was carried out, in which each of the textbooks, which are the object of study, were analyzed: three of the EGB corresponding to the eighth, ninth and tenth years and three corresponding to the first, second and third years of the BGU.

For the elaboration of the observation guide, presented in Table 1, the suggestions of Standaert and Troch (2011) were taken into account, regarding: objectives, contents, approach, structure, among others, and aspects referring to evaluation were added. Likewise, the indicators were grouped into curricular elements (objectives, contents and evaluation), considered as criteria in this section. Using a Likert-type scale, each indicator was evaluated as follows: Satisfactory (S), Moderately Satisfactory (MS) and Not at all Satisfactory (NS), and numerically with 3, 2 and 1 to each of them, respectively. The instrument was validated by experts and the reliability coefficient, according to Cronbach's alpha calculation, was 0.808, which corresponds to a high level of reliability.

Criteria	Scale		
Objectives	S	MS	NS
1. The general objective is clearly and precisely presented.			
2. Specific objectives are formulated for each unit.			
3. The objectives are in line with the contents.			
4. Objectives are targeted for everyone, including people with special educational needs.			
5. The performance criteria skills (DCD) are consistent with the objectives.			
Contents			
6. The concepts are updated and have a scientific basis supported by other books.			
7. It presents a precise summary at the end of each unit.			
8. The development of the contents follows a logical and critical process.			
9. The topics are well explained and detailed.			
10. It contains review exercises that go from the simple to the complex.			
11. Meets the requirements of the National Curriculum.			
12. Contains topics that respond to the student's interest and context.			
13. Incorporates ICT to reinforce and complement the topics.			
14. The topics have a logical sequence.			
15. The text uses vocabulary according to the level of schooling and promotes verbal and written expression.			
16. The proposed exercises are related to the concepts already covered.			
17. The examples presented are coherent with the mathematical concepts.			
18. It fosters interest and motivation, creating links of investigation and autonomous work.			
19. It has a variety of exercises to explain and reinforce the concepts.			
Evaluation			

20. Proposes exercises or problems that integrate with other areas.
21. The evaluations at the end of each unit are related to the concepts developed.
22. The exercises and problems formulated have logic with their answers.

Table 1. Textbook observation and analysis instrument by criteria.

For the application of the observation guide to textbooks, there were teams of students belonging to the Pedagogy of Experimental Sciences, Mathematics and Physics career of the Universidad Central del Ecuador, in the academic period 2019-2019. Six teams were formed, one for each text, who were trained in the use of the instrument. Finally, the Microsoft Excel program was used for the statistical treatment of the information and the presentation of results.

4. Results and discussion

The results of the research and of the observations made on the textbooks analyzed at the EGB Superior and BGU levels, by criteria: objectives, contents and evaluation, and according to the evaluation scale: satisfactory (S), moderately satisfactory (MS) and not at all satisfactory (NS), are shown in tables by levels and years. This allows comparisons to be made between them, contrasting the results by criteria with respect to each year and level.

4.1 Results grouped by criteria and years at the Upper GBS level

Table 2 shows the criteria: objectives, contents and evaluation, contrasted with the eighth, ninth and tenth years of Upper Primary School and their respective percentages.

Criteria	Objectives			Contents			Evaluation		
Años	S	MS	NS	S	MS	NS	S	MS	NS
8th	8,00	12,00	80,00	27,14	57,14	15,71	33,33	66,67	0,00
9th	5,00	40,00	55,00	27,00	53,00	20,00	50,00	50,00	0,00
10th	26,67	60,00	13,33	30,95	44,05	25,00	11,11	72,22	16,67
Average	13,22	37,33	49,44	28,40	51,40	20,20	31,00	63,00	6,00

Table 2. Results of the analysis of textbooks by criteria and years at the EGB Superior level (in percentages)

In other words, it can be seen that the eighth grade textbooks have 80.00% of not at all satisfactory in the formulation of objectives and only 8.00% are considered satisfactory. Regarding the contents, 57.14% declare that the development of these contents is moderately satisfactory. Meanwhile, for the formulation of evaluation activities, 66.67% declared it moderately satisfactory and 33.33% considered it satisfactory.

In Table 2, for the ninth grade textbooks, 55.00% consider the formulation of objectives not at all satisfactory and 40.00% consider it moderately satisfactory. Regarding the contents, 53.00% of the observations say they are moderately satisfactory and, with respect to the evaluation, 50.00% for satisfactory and the same percentage for moderately satisfactory.

Finally, for the tenth grade textbook, Table 2 shows the following results: 60.00% for moderately satisfactory for the formulation of the objectives, 44.05% also moderately satisfactory for the formulation of the contents and, with respect to the evaluation activities, 72.22% receive the same evaluation.

In summary, it can be seen that 49.44% of observations are not at all satisfactory for the formulation of the objectives expressed in the textbooks of Upper GBS; it means that this curricular element so important in the teaching-learning process is unknown to the students. Regarding the contents, 51.40% are developed in a moderately satisfactory way and 63.00% declare moderately satisfactory the formulation of evaluation activities. At this level, textbooks applied without adequate mathematical demands and rigor will produce shallow learning and conceptual shortcomings that will affect their subsequent development of mathematical thinking.

4.2 Results grouped by criteria and years at the BGU level

On the other hand, the criteria: objectives, contents and evaluation are contrasted with the first, second and third years of BGU and their respective percentages, as shown in Table 3.

Criteria	Objectives			Contents			Evaluation		
Años	S	MS	NS	S	MS	NS	S	MS	NS
1st	6,66	66,66	26,66	11.91	61,90	26,19	22,22	66,67	11,11
2nd	14,28	62,86	22,86	14,29	64,28	21,43	28,57	47,62	23,81
3rd	16,67	66,66	16,67	16,67	52,38	30,95	16,67	72,22	11,11
Average	12,54	65,39	22,06	14,29	59,52	26,19	22,48	62,17	15,34

Table 3. Results of textbook analysis by BGU criteria and years (in percentages).

In this sense, it is evident that the textbooks of the first year of BGU are moderately satisfactory in terms of: objectives (66.66%), contents (61.90%) and evaluation (66.67%); while the lowest values correspond to objectives with 6.66% of satisfaction and contents with 11.91%. Evaluation is rated as not at all satisfactory with 11.11%. The evaluation of the objectives (62.86%), contents (64.28%) and evaluation (47.62%) is recurrent in the textbooks of the second year of BGU.

Finally, in the textbooks of the third year of BGU, 72.22% corresponds to moderately satisfactory, the evaluation criterion, followed by the objectives (66.66%) and the contents with 52.38%. Evaluation is considered not at all satisfactory with 11.11%.

In summary, it can be seen that the BGU textbooks are rated as moderately satisfactory in the formulation of objectives, contents and evaluation with 65.39%, 59.52% and 62.17%, respectively, and the lowest value corresponds to the criterion objectives with 12.54%. These evaluations in important curricular elements are insufficient for students to demonstrate the necessary mathematical knowledge to continue with more complex mathematical studies and follow important university careers, closely linked to the use of mathematics: engineering, economics, architecture, statistics, business and education related to numbers; in which they would find many difficulties and limitations.

4.3 Results grouped by criteria and levels Upper EGB and BGU

On the other hand, the results grouped by criteria and levels, compared between EGB Superior and BGU, are shown in Table 4.

Criteria	Objectives			Contents			Evaluation		
Levels	S	MS	NS	S	MS	NS	S	MS	NS
EGB Superior	13,22	37,33	49,44	28,40	51,40	20,20	31,00	63,00	6,00
BGU	12,54	65,39	22,06	14,29	59,52	26,19	22,48	62,17	15,34

Average	12,88	51,36	35,75	21,34	55,46	23,20	26,74	62,59	10,67

Table 4. Results of the analysis of textbooks by criteria and levels EGB Superior and BGU (in percentages)

Table 4 shows the results grouped by levels EGB Superior and BGU in terms of the level of satisfaction or concordance between textbooks and methodological development. The following averages can be observed: regarding the criterion objectives, 51.36% are moderately satisfactory, that is, they are not adequately formulated and are not coherent with each other. Regarding the contents developed, these are also moderately satisfactory (55.46%), which indicates that there are shortcomings and lack of rigor in the approach to mathematical concepts. Finally, in the evaluation criterion, 62.59% is moderately satisfactory, which shows that the proposed problems and exercises are to some extent integrating and keep a certain logical coherence with the mathematical concepts.

However, when contrasting the results obtained in the EGB textbooks (49.44%) with those of the BGU (65.39%), it is observed that for the curricular element -criterion- objectives, the highest percentage corresponds to the BGU textbooks and they are moderately satisfactory, which shows that the teaching-learning activities are better oriented for the achievement of the learning achievements. As for the curricular element contents, there is a small difference in the percentages of both BGU (59.52%) and EGB (51.40%), both are in the moderately satisfactory evaluation. Finally, with regard to the curricular element evaluation, the GBS textbooks have 63.00% while for the BGU it is 62.17% and they are in the moderately satisfactory evaluation. Therefore, much depends on the authors and those responsible for the publication of textbooks to ensure consistency between the EGB and BGU levels in terms of the curricular elements: objectives, content and evaluation.

5. Conclusions

From the results and analysis described above on the textbooks used for the teaching and learning of Mathematics, the following conclusions can be drawn:

The books used by students of EGB sublevel Superior and BGU, have a structure that integrates in their thematic units in a uniform way to: objectives, contents, solved exercises, proposed exercises, integrating problems and recommendations for out-of-class tasks. The research and the information analyzed show that with respect to: objectives, contents and evaluation, they moderately meet the expectations of what textbooks should be for the teaching of Mathematics at the level of EGB Superior and BGU. It means, therefore, that the students who use them do not have the methodological support that allows them to achieve the knowledge required to develop more complex mathematical reasoning and learning.

Therefore, if one considers the role of objectives in the teaching-learning process, it is worrying that they are not expressed in some cases or that they are not closely related between the general objectives of the thematic units and the specific objectives. Students and teachers do not have a well-defined purpose for learning and teaching essential concepts in Mathematics. Also, it was observed that in some cases the contents do not have the sequentiality or sequencing required in their foundation and theoretical development, nor do they have the depth and rigor they require. In addition, it is of concern that the evaluation activities are not formulated to demonstrate the understanding of concepts, processes and development of capacities and skills that students must demonstrate and apply. Mathematical exercises and problems are not presented to measure achievements or to integrate the knowledge developed, or these problems are insufficient.

Finally, it is important to emphasize the relevance that should exist in textbooks at the levels investigated between the objectives and the evaluation, since both curricular elements

make it possible to demonstrate the performance of teachers and students in the teaching-learning process, as well as the rigor with which the thematic content of such an important discipline should be developed. It could well be recommended that the textbooks used for the levels of EGB Superior and BGU, need to be analyzed in depth, in the methodological aspects and the development of the teaching-learning process; that is, in the strategies and techniques that motivate students and teachers to use them in an optimal way.

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REVISTA CÁTEDRA

La universidad intercultural mexiquense y las comunidades rurales e indígenas. Estrategias de acercamiento y experiencias de vinculación

The intercultural mexiquense university and rural and indigenous communities. Strategies of rapprochement and linkage experiences

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Resumen

El modelo educativo de la universidad intercultural tiene como objetivo la construcción del conocimiento en condiciones de equidad y diálogo con los pueblos originarios, sin embargo, debido a la carga ideológica neoindigenista del modelo educativo, el enfoque teórico y las prácticas reales suelen discrepar. Por ello, el artículo analiza los modos de relacionarse de una universidad concreta, la Universidad Intercultural del Estado de México, con las comunidades indígenas de la región. Se realiza dicho análisis a través de los testimonios de una serie de protagonistas indígenas y no indígenas, involucrados en los procesos de la Vinculación Comunitaria, uno de los ejes del modelo educativo. Se concluye que la relación universidad-comunidad se caracteriza, por un lado, por la apertura de la Universidad a las iniciativas surgidas desde las comunidades incluyendo a los alumnos que de ellas proceden, pero, por otro, por una actitud modernizante que da prioridad a las nociones del desarrollo económico entendido en términos neoliberales ante la autonomía cultural del desarrollo propia de los pueblos originarios. En este sentido, ir desmitificando los discursos educativos

hegemónicas se hace de primera importancia para asegurar la transparencia del sistema educativo y su funcionalidad en el contexto de diversidad étnica.

Palabras clave

Comunidad, interculturalidad, pueblos indígenas, universidad mexicana, vinculación.

Abstract

The educational model of the intercultural university aims at the construction of knowledge in conditions of equity and dialogue with indigenous peoples, however, due to the neoindigenist ideological load of the educational model, the theoretical approach and actual practices often diverge. For this reason, the article analyzes the ways in which a specific university, the Intercultural University of the State of Mexico, relates to the indigenous communities of the region. This analysis is carried out through the testimonies of a series of indigenous and non-indigenous protagonists, involved in the processes of Community Liaison, one of the axes of the educational model. It is concluded that the university-community relationship is characterized, on the one hand, by the openness of the University to the initiatives arising from the communities, including the students who come from them, but, on the other hand, by a modernizing attitude that gives priority to the notions of economic development understood in neoliberal terms before the cultural autonomy of the development of the native peoples. In this sense, demystifying the hegemonic educational discourses becomes of primary importance to ensure the transparency of the educational system and its functionality in the context of ethnic diversity.

Keywords

Community, interculturality, indigenous peoples, mexican university, linkage.

1. Introductión

The issue of intercultural higher education in Latin America is still an emerging and insufficiently known topic. It attracts the attention of researchers due to its high social relevance, since it is related to some of the most sensitive issues of the globalized world, such as: social exclusion, poverty, intercultural relations or cultural and collective rights, the relationship between minorities and the majority, etc. In the face of such a complex context, it is important to highlight that, in Latin America, the so-called intercultural and/or indigenous universities are far from being a homogeneous educational phenomenon; in reality they are a series of educational models that have been emerging in the continent since approximately the 1990s. In a way, all of these models are positioned against educational policies that simply attempt to include young people from ethnic groups in existing university structures. In summary, such educational models are characterized by the following:

First, they offer a type of higher education whose conception and modality can vary significantly (formal, rather informal, itinerant...). Secondly, they handle a concept of interculturality, which presents an immense semantic variation and is subjected to a range of discursive manipulations that depend on the objectives pursued. At the center of attention is the relationship between the nation-state represented by the majority society and the different ethnic groups seen as discrepant from this dominant model.

Third, it generally includes both members of the majority societies and members of ethnic groups traditionally seen as marginalized by these societies. However, the target population

to which these educational policies are directed is usually clearly ethnic. Fourth, they maintain different types of relations with the official bodies of the countries in which they are located (for example, there are state-funded intercultural universities and others that are financially independent). Accordingly, intercultural universities may have different managers (governments, indigenous movements, etc.), a circumstance that pre-establishes what type of epistemic relationship each educational model will maintain with modern and globalized pedagogical ideology. Thus, intercultural universities are located at different points on the axis delimited at one end by clearly decolonial and epistemologically alternative positions to the Western intellectual tradition, and at the other end by what we could call neoindigenism.[1]

If we focus on the first case mentioned, we can affirm that intercultural universities emerge on the periphery of Latin American societies, driven by the indigenous peoples themselves, and as such include in their projects the rethinking of existing social relations, often linked to autonomous demands and ways of life derived from the original worldviews (for example, the current of Good Living known as Sumak Kawsay or Suma Kamaña).

On the other hand, in the second case, intercultural universities promoted by national governments are understood as a kind of affirmative action (positive discrimination) that should compensate for the traditional inequity in the access of indigenous individuals to higher education. They usually operate with the concept of "educational relevance" which is equivalent to the curricular adaptation to the cultural realities of the peoples that the intercultural universities serve.

Mexico is undoubtedly the country with the most intercultural universities in Latin America. Within the framework of the National Education Plan (PNE) elaborated by the government of Vicente Fox (2000-2006), the foundation of ten universities of this type was outlined, a number that has even been surpassed. Most of them were founded by federal agencies and all receive combined federal and state funding.

The educational model of the Mexican intercultural university falls into the aforementioned neoindigenist category, for the following reasons[2]

1) It is an instrument of the state. It belongs to the Higher Education Subsystem of the National Education System, and is managed by the organism of the Ministry of Public Education (SEP) called General Coordination of Intercultural Bilingual Education (CGEIB).
2) It is an educational conception created from outside the native peoples. In the educational model, the native peoples appear as "attended entities", without having a decisive say in the conceptualization of the intercultural education provided to them, and without participating intellectually and actively in the practical management of the respective intercultural universities.

[1] Today, the Mexican indigenist ideology of the early 20th century (extended throughout the rest of the Latin American region) is perpetuated in the form of "neoindigenism". Neoindigenism maintains the paternalistic and welfarist attitude that characterized it in its origins, although nowadays it tends to avoid talking about direct cultural assimilation, and instead uses a more sophisticated rhetoric of "development of indigenous peoples" seen as marginalized entities that do not participate in the benefits of modern civilization (Korsbaek and Sámano, 2007).

[2] The following information derives from the critical reading and the discursive analysis from the educational model manual. For a more detailed information go to: Erdosova y Juarez 2017, Erdosova 2015, Erdosova 2013.

3) It practices a unilateral "dialogue of knowledge". The concept of the dialogue of knowledge that justifies the existence of intercultural universities prioritizes the modern Western conception of the self (success, competition, competitiveness, development, growth, progress, innovation, econocentric notion of well-being). In extension, the educational model offers training based on the conventional pedagogical structure (classrooms, teachers, knowledge exams, educational excellence, training by competencies) without giving value to the traditional mechanisms of education practiced in indigenous communities.
4) Seeks an idealized interculturality. The concept of interculturality used by the educational model leaves aside the socio-cultural inequalities and the imbalance of power among the actors involved in the project. In such a way that it is limited to postulate the desirability of a harmonious society of dialogue and cooperation between the cultures that make up Mexico, which are perceived as separate blocks in need of establishing communication. Likewise, by prioritizing the development (especially economic) of the areas served, intercultural universities relegate to the background the urgency of a multilateral interculturality that crosses the entire Mexican society.
5) It practices affirmative action. Despite admitting both indigenous and non-indigenous students, the emphasis of the educational model is placed on the former.

Derived from the above considerations, in this text we established the objective of analyzing and explaining how professionals trained by Intercultural Universities relate to the community through an intercultural strategy called Community Outreach or Community Outreach. This represents one of the main axes of the respective educational theory and is an inseparable part of the research processes, as well as of the teaching and learning processes. It should be noted that the impact on local society is the macro-objective of the educational model. The intercultural university places the link with society at the center, "not society in the abstract, but society directly" (Bastida and Albino, 2011, p. 327). To this end, the intercultural university has at its disposal the mechanism of the Link with the Community, which is determined in educational theory as follows:

> Community outreach is considered as a set of activities that involves the planning, organization, operation and evaluation of actions in which teaching and research are related internally within the university and externally with the communities to address specific problems and needs. (...) The actions of linkage with the community contribute to the social, cultural and productive development of the communities, guiding not only the formative task but also the lines of research derived from the reality to which solutions will be provided. Thus, the Intercultural University fulfills its function of academic and social relevance by contributing to the solution of problems in its environment and establishing a mutually beneficial relationship between it and the community (Casillas and Santini, 2006, p. 153).

In other words, the purpose of Community Outreach is to turn the student into an active protagonist of his own reality through field work in community settings. In this way, it is considered viable to involve students with the problems of their places of origin and to orient them for the future: the professional formed by the intercultural university must have the commitment with the region (in the ideal case, he/she should return to work in his/her community of origin) to actively participate in its positive transformation.

Community Outreach is applied in the area of research as well as in teaching. Each intercultural university is committed to generating development processes in the rural and/or indigenous areas of the respective region of impact, through two strategies. First, through the implementation of research and development projects managed by academics, in which students generally also participate. Second, through the performance of students, who acquire the necessary experience for their future profession through the specific subjects of Community Outreach (transversal axis of each degree) that involve field practices.

2. Methodological aspects

The Intercultural University of the State of Mexico (UIEM) where this research was conducted is the first intercultural university founded in Mexico (it was established in 2004). It was selected because it has a sufficiently long trajectory to assume that it has gathered abundant experience in the practical aspect of Community Outreach within its region of impact. The methodological strategy was to access this experience through the personal testimonies of a group of ten graduates, one of the former rectors and two academic workers in charge of Community Outreach practices. These testimonies were gathered through the qualitative interview technique and were complemented by non-participant observation within the scope of the UIEM and the initial bibliographic review.

Since the intention was to study the perception of the participants of the model, it was proposed to develop a qualitative type of work that would allow the collection of the voice and opinion of the interviewees to evidence the processes of the UIEM from a range of internal actors.

In the case of the graduate professionals, the group of informants that most concerns us because they are the recipients and practitioners of Community Outreach, 9 out of 10 are from the northwestern area of the State of Mexico and 1 migrated to this area from Alamo, Veracruz, at an early age. Their places of origin are: San Felipe del Progreso municipal seat (2), Emilio Portes Gil, community in the municipality of San Felipe del Progreso (1), Atlacomulco, municipal seat (1), Rincón de la Candelaria, community in the municipality of Atlacomulco (1), San Pedro de los Baños, community in the municipality of Ixtlahuaca (1), Jocotitlán, municipal seat (1), San José del Rincón, municipal seat (1) and Santa María Nativitas, community in the municipality of San José del Rincón (1).

In the communities of Emilio Portes Gil and San Pedro de los Baños, the indigenous population is in the majority, in San Felipe del Progreso it is approximately one fifth of the population, and in the rest of the localities it is below 10%; however, in all cases they are places with an indigenous presence and more rural than urban (with the exception of the city of Atlacomulco). According to these data, 7 graduates interviewed come from Mazahua (6) or Otomi (1) speaking families, although these languages are no longer the first language of the informants, and 3 are Spanish speakers who come from mestizo families.

3. Relationship between the university and local communities

As mentioned in the introductory paragraphs, the starting point for understanding how the UIEM relates to regional communities (rural and/or indigenous) is to recognize the University in its position as a provider of educational services and the communities as socio-cultural and territorial units that are recipients of this public policy of the Mexican state. It is important to highlight this fact because the language used in the educational theory of the intercultural university insists on using a multitude of concepts (interculturality, dialogue of knowledge, etc.) that give the impression that the intercultural university is a collective

intercultural work (indigenous and non-indigenous) when in reality the educational model was not conceived, nor is it being managed through joint decision-making with the native Mexican peoples.

One of the few comments in this regard was made by Schmelkes, former director of the CGEIB, who stated that indigenous participation in the construction of the intercultural universities had been minimal (Schmelkes, 2008, p. 336). This means that the educational model establishes from the beginning a hierarchy between each intercultural university (active entity: manager) and the communities present in the respective region (passive entities: attended). Thus, in the UIEM there are academic and administrative personnel made up of both "mestizo" Spanish-speaking workers and those of indigenous origin and speakers of native languages, but in both cases their presence is limited to professionals with academic degrees, trained within the dominant educational system. On the other hand, the participation and axiological influence of indigenous community voices, for example, traditional authorities or elders, is marginal and not in a position to touch the essence of the educational model.

The above can be verified both by analyzing the official discourses, as well as by directly observing the events inside the UIEM or by reviewing the specialized literature (see for example Warnholtz, 2013). According to the opinion detected among UIEM students by Molina (2012), there is not a sufficient link between university authorities and community authorities, who are invited only to show them in public ceremonies with their traditional dress, achieving a colorful folkloric effect. In this regard, Felipe González Ortiz, the first rector of the UIEM, states the following:

> The University must direct its efforts in the medium term so that it is completely in the hands of the native peoples... (...) The most optimistic achievement would be that we arrive at the generation of knowledge with different methodologies and their own epistemologies, and that come out of the thought and languages of the native peoples[3]

Similarly, Stefano Claudio Sartorello (2007), anthropologist and between 2007 and 2013 professor of another institution of the same educational model, the Intercultural University of Chiapas, considers that more than opening the communities to the intercultural university, it is necessary to open the intercultural university to the communities, that is, to seek a reciprocal relationship that overcomes the rhetoric of power and its conjectural political discourses. An example of such a "conjunctural discourse" can be illustrated in the words provided by the ex-rector of the UIEM, Francisco Monroy Gaytán:

> (Community linkage) is something that I don't know how it started, but the linkage is very strong, I don't know if at some point we went out, but I think that in all the linkage work there was a need to work, we looked for state financing programs, we linked them with them and a network was created. And now it has been growing and I think it is consolidating more and more. (...) There has been a lot of acceptance. There is a lot of enthusiasm because what we have to work hard on is that they, the inhabitants of the communities, initiate and complete projects. It seems to me that the (Intercultural) University is highly valued among the communities, I think it has a lot of impact. And the perception, well, precisely in the work of some geographic researchers from the University of Warsaw, the first thing they told me after a field work tour was that

[3] (Interview with Felipe González Ortiz, in Celote (2013, p. 158).

> they felt that there was a lot of acceptance in the different communities for the University. And I think so (interview with Francisco Monroy Gaytán, rector).

This optimistic view contrasts with a more realistic comment made by Gerardo Sanchez, a communicologist of Mazahua origin, during a public event at the UIEM, which exemplifies a possible point of view of community stakeholders:

> We already have a University, the University is very beautiful in terms of infrastructure and everything, but from my very particular point of view, it is now necessary to include the thought and the word of the indigenous peoples within this University. (...) I have the hope that hopefully the Mazahua will take over this University, that the thinking will really be within this University. I have commented, hopefully the University will be the seed of the Mazahua people's thinking, hopefully the great problems that the Mazahua people are experiencing will be discussed there. Hopefully the young people who are in the University will return to their communities to solve the problems, not to be part of the problem, but to solve the problems[4].

This basic sample of the variety of discourses shows that the relationship between the Intercultural University and the regional communities is a complex and controversial issue. In order to clarify this issue from the point of view of the actors directly involved, we will now analyze the mechanisms of Community Liaison as described by the academics in charge of this area and the UIEM graduates.

4. Results. Perspectives on the reality of Community Outreach from within the UIEM.

The analyzed problem is divided into the following aspects: based on the axis called Community Outreach, the strategies used at the UIEM level towards the outside and those applied within the teaching-learning processes of the students.

In the UIEM we can identify two key projects. The first is called Social Incubator of Cultural Industries, which was created under the business incubation model supported by the Federation with the perspective of integrating into the processes of Community Linkage, promoting solidarity and local economies, and forming social businesses. The Incubator works with community producers (farmers, artisans, etc.), forming strategic alliances with the different chambers (de Negocio, Libanesa, Nacional Restaurantera), secretariats (of Economy) and groups (Wallmart), and consolidating the business projects before the Ministry of Finance.

The second project, the University Tianguis, collaborates directly with the Incubator, participating in the sustainable productive projects together with the community producers, who were initially contacted by the professors of the Bachelor's Degree in Sustainable Development. The Tianguis has been held since 2011 every 15 days in the spaces of the UIEM, generating an occasion for selling, buying and bartering, where in addition to the producers involved with the Incubator, healers, midwives, etc. participate. It

[4] *Intervention by Gerardo Sánchez* of Radio Mazahua de Tuxpan during the presentation of the book *El nacimiento de la primera universidad intercultural de México* (by Antolín Celote Preciado), March 10, 2014, UIEM, San Felipe del Progreso.

is also a teaching opportunity, since the students come into contact with the artisans and learn directly from them.

To learn about the ways in which the UIEM articulates with the communities through these two concrete strategies, two academics in charge, Alonso Reyes Lopez and Micheline Dorcé Donnacien, were interviewed. The interviews focused on clarifying the protagonism of the UIEM and of these communities in the process of design, management and implementation of the Community Linkage projects.

In the case of the Incubator, projects can arise from two sources: from requests from internal actors (students) or external (people from the communities or entire communities). According to Alonso Reyes López, the first incubatees were students and their parents who shared their ideas to land, such as raising sheep or rabbits; they also requested support to strengthen existing businesses. An illustrative case is that of Palmillas Plateros:

> The community came forward. The 23 producers of silverware that were already consolidated, they were being supported since the 70s, but they have never had such a growth. When they arrived with us, we began to form this triple helix model, where we sought financing for them in the consolidation of organizations... Then we organized an exhibition of silver art with a cultural center and donated kilos of silver through companies to the 23 producers so that they could carry out their activity and have an exhibition and sales space (interview with Alonso Reyes López, academic).

Another possibility is that a project is formulated by the UIEM and in the form of a proposal is taken to the communities to be considered as an option by the local people. In these cases, the approach methodology consists of sensitizing the interested parties (students, parents, etc.) on entrepreneurial issues, advising them to make their ideas "come together" and making their projects possible in the institutional sphere (government agencies, organizations, chambers of commerce). In this process, there are different limitations, for example, the fact that official institutions strictly adhere to the vision of development based on profit, economic growth and competitiveness:

> When we started, we did not have a theoretical and methodological approach. At the beginning we found an institution that tells you that you have to have a marketing plan, etc., so we said: "Well, the proposal is for small producers, we are with people with an average of 1.5 or 2 hectares, they produce for self-sufficiency, for self-consumption". And that began to be questioned and made it so that a project could not go through because they told us, "It's so they can sell their stuff, not consume it themselves" (interview with Micheline Dorcé Donnacien, academic).

The testimony cited above highlights the superimposition of the dominant economic perspective on local economic visions. The latter are influenced, even in the highly globalized State of Mexico, by indigenous cosmovisions and by the logic of community coexistence, in contrast to modern individualism oriented towards economic growth. Observations such as these are relevant for understanding the conceptual scope of the intercultural university's educational model, above all the concept of interculturality and the dialogue of knowledge in a position of equality. However, as can be observed in daily practice, there is a certain value disparity between traditional indigenous knowledge and modern scientific knowledge, the latter being the first inter pares.

Now, let us turn to the experiences of alumni with Community Outreach at UIEM. At this university, each semester a subject is taught that should prepare students for field work with communities in the region. The subject of Community Liaison starts from the first semester with the objective that students begin to search for information and conduct research to reconnect with the past and present of the community, and thus achieve a kind of discovery of their own (Celote, 2013, p. 78; González, 2007, p. 73). The students choose the localities to be linked assuming that, by locating the needs of the target community, they will be maturing ideas that will later materialize in the form of a student project or a thesis.

Students can carry out fieldwork in groups or small teams. Field trips are organized with the help of a professor who has knowledge of the place and can mediate entry into the community for the students. The site may be selected by the collective decision of a work team, or also by the initiative of specific individuals, as it is possible for a student to propose his or her own community as the target of the project and even involve family members. It is also possible to do completely individual work. Then, with the support of the University, the approach is made.

To go deeper into this issue, it should be emphasized that young people from very different backgrounds study at intercultural universities. To begin with, it is necessary to mention the variant relevance attributed to higher education by the regional population, which is manifested in different types of personal attitudes. In certain sectors of the Mexican community, studies are not considered necessary to acquire goods, which is why more than half of the parents of UIEM students do not recognize the importance of university education (Silva and Rodriguez, 2012, p. 87).

In addition, the life experience of the students is far from homogeneous. Some come from municipalities or cities, and therefore the community environment may be outside their direct experience and limited to superficial and often stereotyped knowledge. But the majority of students come from marginalized localities and low-income families. The latter take advantage of the accessible location of intercultural universities, built in rural and ethnically concentrated areas, and for this sector of the population they often represent the only option for university studies. The UIEM is in the Mazahua ethnic zone and is located on the outskirts of the San Felipe del Progreso municipality. Therefore, for a large number of its students, the community is the primary socialization environment, which is a characteristic that most identifies them with the intercultural university, as Molina (2012) found precisely at the UIEM.

After graduation, the links between the alumni and the community of origin can either dissolve, or be maintained and continue to develop through the work performance of the new professional. The first situation is well documented, especially among young people of indigenous roots, graduates of conventional universities, who tend to join the formal urban market outside their places of origin. In rural communities, the fact that a young person returns to his or her place of origin may well be seen as a sign of failure, especially if he or she does not complete his or her studies. Intercultural universities seek to reverse this belief by training students to consciously engage with their villages.

Let us now review the particular testimonies of these interviewees about the Community Engagement that took place during their studies at the UIEM. The particular experience of each graduate has to do more than anything else with their previous involvement with community settings. Their perception of the fieldwork experience ranges from non-problematic experiences with the community to overtly conflictive situations. A detailed description of the respective experiences can be found in Table 1:

Linguistic-cultural family background of the graduate	Community(ies) where the linkage was made	Summary of personal experience	Project follow-up
1. **Ismael. Spanish-speaking mestizo**	Rincón de la Candelaria, Atlacomulco	Diagnosis of 3 months during the 2nd semester of the degree. Positive reception in the community due to prior permission from the delegation. Local inhabitants were not familiar with UIEM, they expected to receive retribution for their collaboration in the project, there was a need to handle sensitive situations.	No
2. **Yeni. Mixed Spanish speaker**	Emilio Portes Gil, San Felipe del Progreso	Research on religions and their position in the community through the application of interviews. Positive reception due to the presence of a team member originally from the community, the familiarity of her father in the locality and the previous knowledge of the UIEM by the local inhabitants.	No
3. **Jeri. Mixed Spanish speaker**	Palmillas, San Felipe del Progreso	Research during the 1st semester of the degree on the social context of traditional medicine practitioners. Problematic reception, since the professor of the subject had not facilitated the contact with the community to the detriment of the quality of the work done. Concern of the team members about the possible appropriation of the work by the teacher led to the delivery of the final product directly to the delegation of the studied community. The opinion that most UIEM students do not show interest in sharing the fruit of the research with the communities.	No
4. Eden. Mazahuaspeaker	Jiquipilco	15-day research on the customs previously practiced in the community. Positive final reception after a period of mistrust and aggression. The opinion that the UIEM could carry out excellent projects if there was no lack of institutional support.	No
5. Norma. Mazahuaspeaker		Research during the 1st semester in the subject of Community Outreach. There were no clear agreements about the work done. During the rest of the course, the outlets were scarce. The opinion that Community Outreach was more practiced by the students of the Sustainable Development course.	No
6. Rosario. Mazahuaspeaker	San Juan Xalpa, Iztapalapa	Research during the 1st semester in the subject Community Outreach with the purpose of collecting traditional knowledge about medicinal plants. Positive reception, the inhabitants were pleased with the young people's interest in traditional medicine.	No
7. Gaba. Mazahuaspeaker		Research during the 1st semester, collecting data on a local legend. The work was done towards the end of the semester and time was scarce. Positive	No

		reception due to the friendly attitude of the students despite their lack of knowledge of the Mazahua language, and the inhabitants' surprise at the young people's interest in the Mazahua language.	
8. Alma. Mazahuahablante	San Juan Xalpa, San Felipe del Progreso	Each semester a project was carried out in a different community (workshops, exhibitions, implementation of eco-techniques, environmental projects, elaboration of a monograph on a community that was not made public because it was unfinished). Positive reception in the community of origin, in the others the professors mediated. The UIEM was known in the adjacent communities, in the remote ones a presentation was needed.	No
9. Anayeli. Mazahuaspeaker	San Miguel Tenochtitlán, San Felipe del Progreso	Research on the history of the community through interviews with elders. Positive reception.	No
10. Griselda. Otomí speaker	Community of origin, several unspecified communities of the state	Historiographic documentation of the community of origin following an invitation to classmates. Subsequent research in various communities in the municipality (surveys on the social, cultural, economic and political situation, thesis). Both positive and negative reception, due to tensions caused by certain types of questions.	No

Table 1. Alumni's personal experiences with Community Outreach at UIEM

In the testimonies it is noted that at the beginning of the linkage, several circumstances must be taken into account: the fact that in some places the UIEM and its mission are unknown, which slows down the collaboration, the occasional lack of support from some teachers, the low interest and commitment of some students, and also the tension produced by the negative attitudes rooted in the communities, such as distrust towards any unknown person who is not a "paisana" (specifically towards upstart researchers) and the habit of receiving support and incentives (such as the lack of interest and commitment of some students):

> The situation in the communities is somewhat delicate when it comes to entering, they generally expect to receive something, some support. A lot of this situation, I am sorry to say, but we owe it to our politicians, because they are the ones who deceive the people of the community when they are in some election period and never return to the community (interview with Ismael, mestizo graduate).

> At the beginning, people see you as a little strange and sometimes they tend to be a little aggressive, but as you deal with them during the internship, they realize that your intentions are not bad, so they agree to your questions (interview with Eden, Mazahua graduate).

From the logic of their intercultural training, UIEM students are supposed to be equipped with certain skills (knowledge of native languages, intercultural dialogue methodology, etc.) that allow them to establish functional relationships with a community. One of the basic strategies to establish trust is to integrate into the work team a person knowledgeable

about the place, preferably a native speaker of the local indigenous language. When the approach to the community is successful, it generally leads to enjoyable experiences:

> It was easy to enter the community, since it was a team work, I was fortunate that one of my classmates belonged to the community and her father was well known in the community, so obtaining the information was no problem (interview with Yeni, mestizo graduate).

> The people are kind, they let us into their house to see what kind of plants they had, they shared with us small leaves of the plants to use at home, some people even invited us to breakfast, while our conversation went on. Older people have many things to tell and it is nice to listen to them. (...) Some people were surprised that we were interested in our traditions, they were happy that we were interested in natural remedies when at that time allopathic medicine surpassed us in every way (interview with Rosario, Mazahua graduate).

Although the majority of the testimonies indicate having received a friendly welcome during their field work or having been able to develop it over time (8 out of 10), a series of limitations were also mentioned that did not allow the work to be carried out to the full. These limitations have to do with both the institutional organization and the personal attitudes of the actors involved.

Regarding the role of the University, the first issue that stands out in the testimonies is the amount of time to be dedicated to the fieldwork. In this context let us point out that according to a study conducted in 2014 (Medina and Hernández, 2014, p. 60), one third of UIEM graduates felt that not enough importance had been given to the professional practices of Community Liaison. Some testimonies from the present research support this position:

> I don't remember how it was in the first semester, after that we almost didn't do it, in fact, the ones who went out to the community were the Sustainable Development students. We took the Common Core, it was like your last chance to decide what career you wanted to study, and we took a subject called Community Outreach, we did go out, but we almost never went out in the career (interview with Norma, Mazahua graduate).

This problem is evident in the unfinished projects without follow-up. This situation was pointed out by all the interviewees and shows that if the University does not provide conditions for students to develop their work continuously in a single community throughout their studies, it will be difficult to ensure a systematic and solid final result, such as a functional project or a thesis through which the knowledge gathered can be returned to the community that had provided it:

> Then we did not return (to the community). The school was created a short time ago, I think that if there were support from the school, good projects would be achieved, better than those done by foreigners (interview with Eden, Mazahua graduate).

> I think that the University's approach is wrong, very wrong, they are talking about how we are helping the indigenous people when it is not so. They do events to death and what good does it do? They should do real projects, start and finish or leave them in follow-up with the members of

> the community, research that is useful, that has results, that resources are lowered and that they are not lost along the way, that community help is seen (interview with Anayeli, Mazahua graduate).

The same academics in charge of Community Outreach also point out that it is difficult to keep a team of students working during the course of the degree, especially because the first practices of Community Outreach begin in the first semester (the so-called Tronco Común, which corresponds to academic leveling) when the students had not yet chosen the career and in the following semesters they follow their lines and stop coordinating with each other.

> I had the case of some boys two years ago, and the girl even promoted light for her community, they wanted to appoint her as councilor of her community because she did many things in such a short time... And the commissariat proposed that she stay, that she do more for her community, but this girl said: "Hey, I am from the first semester, let me continue advancing and see what else I can do". But no, after a semester passed, other subjects were given and everyone went to their own division, the follow-up that I had was disintegrated because the girl was from another division (interview with Alonso Reyes López, academic).

In addition, not all students are motivated to leave their comfort zones. They feel that studying does not imply leaving the classroom and, faced with the discomfort of field work, they try to reduce the practices to a minimum or avoid them altogether. This has repercussions on the quality of the students' ethical conduct. They do not assume solidarity and commitment with the communities from which they extract information and do not share the final product of the work with those who had supported them in the research process (authorities, informants, guides, etc.).

The above-mentioned problem is complemented by the professional conduct of the respective teachers. In theory, the teacher is supposed to advise the students' work and mediate their first contacts with the selected communities, but in practice, not all teachers take care of these matters, which is detrimental to the quality of the students' work.:

> The vast majority of the community did not even know what we were going for and I feel that the professors should have guided us on how to link people who do not have that knowledge. Now I think we could have advertised for the person we interviewed to teach courses or diploma courses or at least just classes for those interested. Anyway, now I can think of things that did not cross my mind at the time. We did the work in the first semester, so we didn't have the slightest idea of what we can do. We did not know that the field of action is very large and that we could do much more. (...) It is as if the professors here believed that in one semester you already know how to get involved with any community, since you have already learned it well. (...) We gave the work to the community delegate and to the person we constantly interviewed, whom we visited to integrate the research. That was our decision and above all our ethics because the professors did not make sure that this work would reach those involved in the community. I think that many colleagues are not interested or concerned about this, only about their qualification, and this increases the difficulties for the following generations (interview with Jeri, mestizo graduate).

Let us point out in closing that after graduation, among the young people interviewed there is generally a positive attitude towards field work. Relating their experience with Community Outreach and work activity after graduation, we can affirm that half of them (5) have worked at some time in community settings in their respective jobs. On the other hand, the remaining 5 graduates who have not done this type of work state that they would like to do it or would not be opposed if such an opportunity came their way. This leaves favorable evidence about the social and intercultural values of UIEM graduates, although, in order to formulate more categorical conclusions, more detailed research on this aspect of intercultural higher education would have to be carried out.

5. Conclusion

The UIEM relates to the rural and/or indigenous communities of the region of impact through a series of strategies known as the Link with the Community (one of the axes of the educational theory of the Intercultural University), which consist of the articulation of institutional projects (business incubation, fair trade) and student projects within the framework of the formative processes. This relationship is manifested on the one hand in the willingness of the UIEM to be open to ideas arising from students and communities and support their realization, but on the other hand, also in a modernizing attitude that gives priority to notions of economic development (business creation, dissemination of entrepreneurial thinking in the communities) and anthropological practices of "rescue" of ancestral knowledge that are still preserved in the communities and that lead to rather superficial descriptions of mythology, traditional medicine, history, language, etc. Likewise, there seems to be insufficient feedback and exploitation of the work done by the students in the researched communities, either in terms of follow-up throughout the career or ethical commitment with the collaborating communities. Hence, interculturality and dialogue of knowledge as the key concepts of the University's educational model in practice result in an inequality of positions among the actors involved in the intercultural project.

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REVISTA CÁTEDRA

Los roles de género en el concepto de familia fang: un sistema de socialización diferencial

Gender roles in the fang family concept: a differential socialization system

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Resumen

Este artículo se centra en visibilizar los roles de género, productos de la socialización diferencial del concepto de familia fang. Este objetivo fundamental pone de manifiesto que al ser la familia una institución en la que se produce la primera socialización de las personas, el modelo de familia fang no se aleja de este estándar, porque la manera de socializar dentro de esta cultura, hace que a los hombres se les asignen unos roles diferentes a los de las mujeres. Esto se ve notablemente en la división sexual del trabajo que está muy presente en el concepto de familia fang, perpetuando así el sistema de socialización diferencial que impulsa y agrava las desigualdades sociales, motivadas por el sexo-género. En este sentido, encontramos que las tareas domésticas y el espacio privado, corresponden exclusivamente a las mujeres, mientras que los hombres ocupan el espacio público. Una sociedad regida por este sistema de socialización diferencial crea un desequilibro donde las mujeres terminan siendo minimizadas. A fin de estudiar mejor esta temática, se ha utilizado la metodología cuantitativa, partiendo del método descriptivo, el cual ha permitido reflejar la incidencia de este fenómeno en el grupo poblacional seleccionado. En esta investigación se reafirma que, los roles de género tradicionales se promueven de distintas maneras dentro del concepto de familia fang fomentando una educación de dependencia, donde las aptitudes cognitivas y personales de las mujeres son siempre infravaloradas por el sistema patriarcal fang.

Palabras clave

Familia, género, patriarcado, rol, socialización.

Abstract

This article focuses on making visible the gender roles, products of the differential socialization of the concept of the Fang family. This fundamental objective shows that since the family is an institution where the first socialization of people takes place, the Fang family model is not far from this standard, because the way of socialization within this culture makes men be assigned different roles than women. This is notably seen in the sexual division of labor that is very present in the concept of the Fang family, thus perpetuating the differential socialization system that drives and aggravates social inequalities, motivated by sex-gender. In this sense, we find that domestic tasks and private space correspond exclusively to women, while men occupy public space. A society governed by this differential socialization system creates an imbalance where women end up being minimized. In order to better study this issue, a quantitative methodology has been used, based on the descriptive method, which has made it possible to reflect the incidence of this phenomenon in the selected population group. This research reaffirms that traditional gender roles are promoted in different ways within the concept of the Fang family, fostering an education of dependence, where the cognitive and personal skills of women are always undervalued by the Fang patriarchal system.

Keywords

Family, gender, patriarchy, role, socialization.

1. Introduction

The purpose of this article is to analyze gender roles in the concept of the fang family from the differential socialization of childhood. In this sense, it is intended to highlight the differential and complex socialization system that is carried out when determining what is masculine and feminine. A real fact is that because of the Fang family model, as in other African peoples, the education of children does not depend exclusively on the parents, but on the whole community.

Taking into account the impact of differential socialization in education within the concept of the Fang family, as the main agent of socialization where the masculine and feminine are constructed, this study analyzes this phenomenon based on the existing literature on the subject.

One of the institutions respected by the Fang is the family, which is why it is not exhausted exclusively with the father or mother, because it goes beyond, because it even includes people who have no blood ties in common, but by the kinship of a common ancestor or a totem. For the Fang, the family institution is very important because it is the center where the human person is formed. The family in the Fang community follows the same trend as that of other African peoples. Thus, it has been found that:

> For African peoples, the family consists of a much wider circle of people than in the Western world. In the traditional community, the family includes children, parents, grandparents, uncles, aunts, brothers, sisters who, in turn, have their own children, as well as other immediate relatives (Mbiti, 1990, p. 142).

This matter mentioned by the author cited above, presents the idea that in Africa the family extends far beyond the parental circle. The family constitutes one of the great values that African peoples possess and on which society fundamentally rests. The kinship ties that are established among the Fang people condition the individuals who belong to this tribe or

family. Their way of acting, speaking or reacting is not the same for those who do not belong to their tribe. In this sense, the concept of the Fang family remains strong and blood ties constitute an unbreakable bond. While it is true that in all African peoples in general and particularly those of Equatorial Guinea, the family structure is not nuclear, it should be noted that, at present, this structure has deteriorated in certain individuals modernized and influenced by globalization, which has blurred the concept of family previously held by the Fang community. Nevertheless, in spite of the multiple changes, "the African family today, as in the past, extends from the restricted nucleus (parents-children) to the whole kinship where customs and traditional ties combine to form a connected and indissoluble system" (Ki-Zerbo, 1972, p. 22).

Differential socialization within the concept of the Fang family is the result of the very consolidated patriarchal system on which this ethnic group is based, in such a way that the transmission of gender roles is done from an androcentric perspective where girls end up being educated to be at the service of boys. The gender roles discussed here are not a fortuitous fact, but are those that sustain the subordination of women, which is promoted by the differential socialization of the patriarchal system. Girls and boys are socialized from an early age to behave in a certain way, just as the adults who are educating them want them to. Therefore, problems such as gender violence, polygamy, levirate marriage, abortions, education, are current issues in Equatoguinean society, but they are approached and solved from a patriarchal position, without considering the gender perspective.

Therefore, the problem posed in this research has to do with the way in which, from the differential socialization, boys and girls are educated within the Fang family model, assigning girls some values and boys others. What is intended with this model of education is to clearly establish the space that each one should occupy, and the roles they should play at the social level, in this way, it is evident that girls are educated to be mothers, get married and take care of their husbands and children. The assigned gender roles are the result of the way a woman is wanted to be fang, that is, submissive, while the man is dominant.

In relation to the above, the problem posed is based on some questions that are key to better unravel the issue being addressed. The research questions to be answered are the following: What is the concept of the Fang family? How does differential socialization influence the concept of the Fang family? To what extent do gender roles aggravate the subordination of women in the Fang culture? How does differential socialization help to maintain the Fang patriarchal system?

The asymmetry that can be glimpsed within the concept of the Fang family in relation to the transmission of gender roles from the earliest stage allows boys and girls to identify with certain values and behavioral patterns. In the case of boys, they are molded to dominate while girls are educated to be passive. In short, differential socialization also allows boys to receive a different education than girls, something that is later reinforced at school.

If the assignment of gender roles is a product of differential socialization in which men are educated as dominant beings and women as submissive. This way of educating is related to the androcentric vision. In this sense, the thesis defended in this research work is the following: *the concept of the fang family promotes differential socialization through the transmission of gender roles that turn women into submissive, strengthening the patriarchal system on which this socialization model is based*.

This article is structured mainly in three parts. The first corresponds to the state of the question, which is the theoretical foundation in which the terminology of gender roles and differential socialization is addressed. In the second part, the defense of the thesis is

presented, where a series of arguments that evidence the differential socialization in the concept of fang family is presented. The last part is the exposition of the conclusions reached with this research.

2. State of the matter

The existing literature on differential socialization and gender roles is vast. However, in the African context, a number of problems are encountered when dealing with these concepts, mainly due to the scarcity of bibliographical sources on this subject. Over the years, sociology, anthropology and ethnography have studied the concept of the African family, sometimes comparing it with other family models such as the Western family. However, the same academic interest has not been shown in gender roles within African societies in general.

Due to the differential socialization model, there is, as mentioned above, a specific way of educating boys and girls. All of this is what causes boys to be socialized differently from girls, who end up learning certain values, beliefs or behavioral patterns established to serve men. Before going deeply into this topic, it is convenient to lay the theoretical foundations on key terms to better understand this issue. In this sense, it is convenient to offer some conceptual approaches about the family, differential socialization and gender roles, in order to study the concept of the fang family.

The family is one of the first institutions in the socialization of people. Therefore, it is important to pay attention to the fact that, in the family, people end up assimilating from an early age, everything that is told or taught to them. Socialization is determined by the family, which imposes or decides how to educate its sons and daughters.

Even though there are different family models depending on each culture, there is a common fact in all of them, which is that "the family is the first context where we begin our development, where we establish our first social relationships with different people and begin to develop an image of ourselves and the world around us" (Musitu & Cava, 2001, p. 11). Therefore, it is a fundamental nucleus for constructing the identity of people based on their sex.

We learn to be boys or girls, men or women, based on the expectations of the people who had to socialize us within our family. It should be noted that it is not an education common to all families, mainly because "Each family is a world and has its individual characteristics that make it different from another" (Meil Landwerlin, 2006, p. 105). All this means that education is educated differently according to the type of family in question, although ultimately, the fundamental objective of this education is to socialize people.

The recipes of how people should be educated are predicted by culture, which is in charge of providing families with the necessary tools so that those who are going to be part of society act according to certain standards. The expectations of parents are very important in establishing differential socialization, assigning specific roles for men and others for women. The process of differential socialization that begins with the family is reinforced by the school, where the boy or girl may realize that certain things are required of them because of their sex, which they must do because socioculturally this is what identifies them.

For this reason, socialization is defined as "a process through which children develop habits, skills, values and motives that make them responsible and productive members of society" (Papalia, 2005, p. 231). Therefore, it is a process linked to education, since it is the moment in which the child learns language, behavior, culture, etc. He also begins to see how the father performs certain functions that the mother does not. One of the important aspects of

this first phase of socialization is that the child learns to identify with his or her sex, based on the roles he or she must play. In this sense, socialization is defined as:

> The process through which people acquire the values, beliefs, norms, and forms of conduct appropriate to the society to which they belong. To this definition we could add the concept of social interaction, since it is through social interaction that we learn and reproduce cultural, social, religious, gender, etc. patterns (Musitu & Cava, 2001, p. 115). (Musitu & Cava, 2001, p. 115).

As the researchers mentioned in the previous quote point out, socialization has to do with the way in which we acquire all the information we need for ourselves, and that throughout our lives this information is perfected. Therefore, the family plays an important role in socialization because it is the crucial moment where identities are built, where boys and girls assume different roles. According to some researchers, "the socializing agent par excellence is the family" (Martínez-González, 1996, p. 88), because it is the nucleus where individuals assimilate the values, beliefs and behavioral patterns inculcated by adults in their community.

The family is the germ where differential socialization takes place, therefore, a construction of the masculine and feminine. Gender roles occupy such a preponderant place in the construction of identities. And this does not necessarily depend on whether it is a Western, African or Asian family model, in all of them there is a common component, and that is that people are socialized in such a way that each one functions according to the behavioral patterns that are socially assigned to them. The great influence exerted by the family in socializing individuals in a differentiated manner, it is argued that:

> The family is the vehicle that transmits cultural patterns through several generations, while at the same time allowing for their modification. Among its objectives are: the protection and continuation of upbringing; the teaching of behavior and interaction with society; the acquisition of a gender identity; the inculcation of social, ethical and moral values; the shaping of a personal, family and social identity (Ares-Muzio, 2002, pp. 18-19).

The transmission of gender roles by the family is thus a component of socialization in which we learn to function in a certain way. This way of constructing identities through socialization is not alien to the concept of the fang family, where even though primary socialization is not exercised solely by the parents, it ends up determining how these individuals will be.

The problem that underlies the above, and which will be developed below, has to do with differential socialization, which reinforces social inequalities and aggravates female subordination in the Fang culture.

3. Thesis defense

After laying the theoretical foundations of this research, it is convenient to recall that the thesis defended is the following: the concept of the fang family promotes differential socialization through the transmission of gender roles that turn women into submissive, strengthening the patriarchal system on which this model of socialization is based. When speaking of gender roles, it should be noted that "they are those social and behavioral norms

established and perceived as belonging to men and women according to the social construction of masculinity and femininity in society" (Myers, 2006, p. 980).

Based on this approach, it is prudent to note that differential socialization largely shapes gender roles within the concept of the fang family. While the category of gender is not the only one to establish differential socialization, it determines the fact that women become dominated by men. In this sense, the family constitutes one of the great institutions that Africans possess and on which society fundamentally rests. Based on the above, the following argument is decisive in pointing out that:

> Reality shows that an anthropological understanding of the family is a prerequisite for seriously considering its impact on harmonious human development and the growth of society, which is necessarily linked to this human reality (Santelices-Cuevas, 2001, pp. 183-198).

For this reason, it is imperative to understand gender roles in the concept of the Fang family as part of the larger African family. So much so that:

> To speak of the traditional African family is to speak of a large family. This is defined as the group of people coming from a common living ancestor, gathered in the same place - generally the concession -, subjected to the same chief - the oldest of the oldest generation (father or uterine uncle) - , responsible for the economic life - he is the manager of the collective goods - and for the cult given to the telluric powers and to the ancestral spirits of which he is the priest (Maurier, 1966, p. 195).

Thus, socialization does not depend only on the parents, but extends beyond this circle. The education of boys and girls is carried out by the whole community where each one identifies with what he or she should do according to his or her sex. The Fang, as part of the African culture, are not far from the reality that can be observed in African villages. Regarding the value of the family in the Fang ethnic group, some authors point out a fact that seems important to emphasize, because it shows in detail the meaning of family for the Fang.

> The fán family tends to be broader and offers a complex structure; the extent of kinship in the norms of social interaction tends to be much greater. This stems from the inclusion of the primary family in larger kinship groupings. The Fán family constitutes a social group distinct from the European family; and kinship relations are conceived in a more diverse way than in Europe (Nzé-Abuy, 1985, p. 9).

The Fang patriarchal system is set up so that men take care of and protect women, considering them inferior in many aspects, such as reasoning capacity, management of household economic resources, etc. As has happened elsewhere, patriarchy is the manifestation of the fierce authority of men over women.

This patriarchal government that, in principle, has been lived and is lived in other societies, according to some feminist postulates, "is characterized by the authority of men over women and their children imposed from institutions" (Castells, 1998, p. 159). In this sense, the Fang institution that has imposed this authority of men is the family. In fact, in the Fang family system described above, the man has an active role since he is the one who provides the woman with what she needs for survival.

The Fang patriarchal system is the result of men's authority over life in society. Thus, we see that "the Fang family orientation has always been, until today, patrilineal or from the father's line [...], the children succeed each other and follow the father's line" (Mibui, 2005, pp. 91-92). As the Fang family orientation is constituted in this way, men become the leaders of their communities or villages, in which they arbitrarily decide, from an androcentric perspective, the way in which each of the individuals who are part of these communities should function.

Education is a very important factor that has helped to maintain the submission of Fang women. In this sense, it is sensible to admit that the Fang patriarchal system that marks the relations between men and women is the product of a process of assimilation and learning of certain behaviors that are not isolated, since they have an impact on the behavior of individuals. Therefore, it is necessary to pay attention to the fact that "[...] the panorama of a latent patriarchal culture imposes the dissociation of men and women in order to assign to the former the privilege and condition of being a subject, and to women the condition of being an object" (Scott, 2005, p. 16).

In view of this, the Fang patriarchal system presents several manifestations where women are constructed from the male perspective, in which they comply with all the cultural norms of oppression, domination and exclusion established or agreed upon only by men. The concept of the Fang family perfectly promotes differential socialization based on whether one is male or female. Community balance depends to a large extent on each person fulfilling the role assigned to him or her. Therefore, from the time babies are born, parents behave differently depending on gender. Thus, for example, girls are raised differently from boys.

The education of girls is the task of the mother, but it is the father who says how the girl should be educated, who, in turn, is responsible for educating the boy. One of the main problems that this type of education has caused is that more importance is given to boys than to girls when it comes to educating them. Although everyone goes to school, there is a very high probability that girls do not finish school. All this is the result of the socialization model inculcated in the family. This differential socialization model, which transmits gender roles in the concept of the fang family, has led to the fact that:

> Many times the traditional family, including its women, has been accused of being the main channel of transmission of the patriarchal principles that have governed fang society: girls assimilate that they must serve men, they must learn what things please men (Pérez-Armiño, 2018, p. 55).

It is evident that this assimilation of which Pérez Armiño speaks, is transmitted in the family and then reinforced in the school, because it is also important to emphasize that the school is the second agent of socialization where the differential socialization that begins in the family is increased. Gender roles are assimilated from childhood and based on this, gender relations become a factor that allows girls to have an unequal education in the sense that they are educated to serve men, while men are educated to support women.

From the point of view of gender relations, one of the fundamental characteristics of the fang family concept is differential socialization where "parents encourage the adoption of gender roles through the experiences they offer their sons and daughters (choice of toys, for example)" (Monjas-Casares, 2004, pp. 11-12).

According to the approach outlined above, it is the parents who encourage the transmission of gender roles. However, in the concept of the Fang family, the socialization of children does not depend solely on the biological fathers and mothers, as would occur in the Western family model. In this respect, it can be pointed out that in the African Fang family, the fathers and mothers are all those who intervene in the education of the children, who can be uncles, grandparents, aunts, even people of the same tribe who do not have a blood relationship but who share the same totem with a certain family. On the question in the Fang culture there are mainly four types of fathers or mothers.

First, there are the mbeiñ, which refers to the progenitors, that is, the biological father and mother. Secondly, there are the mbala, who are the non-biological fathers and mothers. They can be considered stepfathers or stepmothers. In fact, in Fang culture there is a very popular saying that goes like this: muan ase muan mbeiñ, muan ane muan mbala. It means that the child does not belong to the parents, but to the caregiver. This is to show that it is not worth having offspring if one is not capable of taking care of them. Thirdly, there are the esehe nvong abot, the aunts or uncles on the mother's or father's side. Fourthly, there are the esehe kibot, it is anyone who is the age of your biological father or mother, even if he or she is not from your tribe or ethnicity, he or she is your father or mother, because he or she is the age of your parents. Therefore, they are part of the children's education.

As the Equatoguinean society is multiethnic, what is observed is that, in all the ethnic groups of the country, a certain domination of men over women has prevailed, mainly due to a long-lived strong sociocultural construction. The presence of the sexual division of labor in the concept of the Fang family at the time of transmitting gender roles is undoubtedly evidence of differential socialization. The sexual division of labor is the patent of the Fang family model, which shows that girls, by the mere fact of being girls, must perform certain tasks and boys others. Parents are aware that gender roles must be exercised by their children; in fact, it is at home, in the family, where gender roles begin to be assigned according to the sex of the offspring.

The separation of spaces, public and private, is totally established, so that girls are always assigned the private space, while boys assume the public space. This way of educating children is not a product of the present, but already since the traditional Fang communitarianism this type of education promoted by the families was carried out. Accordingly, Nvé Bengobesama argues that:

> When the children came to the use of reason, they shared life with the elders in the abaa, with whose coexistence they learned many things of the men's working life: sewing the nipa for construction, weaving the pots and fishing baskets and preparing any kind of craft work (Nvé-Bengobesama, 1981, p. 201).

As can be seen, the author cited above maintains that the children were the only ones who had access to that place. At no time does he mention the girl because it is clear that the girl's place was in the kitchen. Within the concept of the fang family, this public space is always reserved for men, so that they can make the appropriate decisions for their own families, thus making them the only ones with the capacity to decide and act on the destiny of their respective families, the sons and daughters remain exclusively under their coverage. Thus, the sexual division of labor and the assignment of gender roles is inculcated from the family nucleus.

In the concept of the fang family, it is observed that, with the assignment of gender roles, the sexual division of labor is created, which is manifested in the following terms:

- When girls are young, they are subjected to primary socialization, which is the result of what they learn in the family. Mothers (aunts, cousins, grandmothers, great-great-grandmothers, tribal mothers, etc.), are in charge of teaching girls that, because they are women, they must know how to cook, wash or iron in order to please their husbands when they have to get married. This means that it is imperative to know how to cook, wash, iron and keep the home clean, so that you have a good husband and he feels at ease because otherwise he would not marry.

This way of socializing girls has made, for example, the fang man not interested in cooking, because he has learned that it is a woman's exclusive role. It is a shameful act to find a man in the kitchen preparing food, because culturally it is frowned upon mainly due to the way in which, in this sense, men have been socialized. Moreover, women assume that it is their obligation to feed their husbands and children. Within the concept of the fang family, it has been naturalized that women should do the housework and men should be the providers of food to their households. Precisely, the result of this is that men do not perform domestic functions, not because they cannot, but because they have been taught that it is the role of women.

Thus, "the gender role is formed by the set of norms and prescriptions dictated by society and culture about feminine or masculine behavior" (Lamas, 1995, p. 4). It is not strange that it is viewed with disdain for a man to engage in cooking, because it is not a behavior assigned to men but to women, and the family should see to it that this role is fulfilled. However, this is a bit contradictory because it is not possible to proclaim equality in some areas while leaving others.

It is important to emphasize that for Equatoguinean women in general, it is important to have a family and to take care of it. In fact, women are the pillar of the African family, because they are responsible for the education and care of their children during the absence of the father, who is away from home working. Often, the role of the woman in the education of the children is such, because she is in charge of transmitting sociocultural values to them, which are usually reinforced by the father. It is worth noting the complementarity that exists between women and men when it comes to educating their children. However, the education of children is always determined by the man. In other words, it means that:

> The man creates an educational model, the woman reproduces it. And when the mother revolts against this education system, she receives violence from the father. The woman is the one who transmits, but the real power is in the hands of the man. She is really the one who educates, but the person who tells her "educate like this" is him [...]. In the Fang ethnic group, the man is in charge. It doesn't matter what the woman says anything. And in fact, when dad shows up at home, everybody shuts up (Melibea-Obono, 2016).

What is clearly evident is that the children's education is dictated by the father and executed by the mother.

- On the other hand, the education of boys is totally different from that of girls. As far as household chores are concerned, boys are taught to do some things such as, for example, fetching water from the well for the house or, on some occasions, washing

> the house itself, although the latter task is usually taken on by girls. The differential socialization of which the boys are the product, makes that those are educated to dominate or command over the woman.

The reality established by the differential socialization fostered within the Fang concept of family is the result of their own patriarchal structure that underpins all these behaviors. Consequently, there is thus a close relationship between differential socialization, gender roles and the sexual division of labor. The common point is that they are promoted from the family which is evidently patriarchal.

Considering that the fang family promotes a system of differential socialization, the result of assigning gender roles to women and men, means that men become dominant. Furthermore, it is not an isolated fact to consider that the sexual division of labor considerably aggravates the subordination of women, who end up being presented by the Fang patriarchal system as useless, because, even when their domestic work can be made visible and valued, it is totally undervalued due to several factors, especially cultural ones.

Gender roles in the concept of the Fang family are asymmetrical, thus, "In its ordinary functioning, men and women share the bed, while work and recreational activities are carried out separately" (Oyono Nzang, 2013, pp. 36-37). The family socializes from an early age and this allows everyone to assume their own role. In the case of men; they will have throughout their lives an active role, instilled and learned from an early age, unlike what happens with women, who assume a passive role and behave accordingly. While it is true that it is accepted that they attend school, what is still not being achieved is that they learn like men or just like them.

Cultural factors continue to be a constraint for women to feel empowered, therefore, the learned submission, the result of differential socialization with respect to gender roles, considerably marks the behavior of Fang women. It is probably good to rethink a more egalitarian family model, since anchoring oneself to cultural values is extremely correct, as long as they allow people to act, grow and live as such. All this because, "the family is the most important socialization agent in the life of an individual, not only because it is the first agent, but also because it is the link between the individual and society" (Rodriguez-Perez, 2007, p. 92). The result is that each individual ends up assuming and growing according to how he/she has been educated.

Gender roles do not escape the concept of the fang family, they are the engine of inequality and promote the submission of women. Men are spared from domestic work not because they cannot do it, simply because this is not the role with which they have been socialized. Therefore, it is necessary to depatriarchalize the culture in order to build another, more egalitarian model of socialization. The foundation of the fang patriarchal system that promotes differential socialization with the assignment of gender roles, makes men dominant over women, because "gender roles found the basis of a system of social, personal and economic segregation between the sexes, in which men belong to the superior category maintaining power over women" (Bourdieu, 2000, pp. 37-38). To refuse to assume that the concept of the fang family does not promote differential socialization and therefore the assignment of roles, is to pretend to hide an evident reality that promotes the subordination of women.

4. Methodology

The purpose of this section is to present the techniques and instruments used in this research. In order to carry out this research, we have opted first for the quantitative methodology. To this end, we first proceeded to a systematic review of the existing literature on this subject. It is very important to focus on the latter, since the literature review has allowed, according to the manuals and academic articles used, to argue about the differential socialization and the assignment of gender roles within the concept of fang family. We have worked with the qualities of human beings that are knowledge products. Moreover, since it is a pedagogical, anthropological and sociological research, we dare to affirm that it is the methodology that best fits this research. Opting for this qualitative methodology has been remarkable for this research, since it is a type of research in which:

> Researchers are interested in understanding the meanings that individuals give to their own lives and experiences. The point of view, the meaning that actors give to their behaviors, or to their lives, is the subject of observation and research. Here value is given to subjectivity in the understanding and interpretation of human and social behaviors. (Anadón, 2008, pp. 198-211).

In this sense, in order to consolidate our research, the descriptive method was used. A descriptive study such as this one, "[...] is based on a rigorous contextual description of a fact or a situation that guarantees maximum intersubjectivity in capturing a complex reality through the systematic collection of data that makes an interpretative analysis possible" (Pérez, 2000, p. 29). In other words, the descriptive method has allowed a better understanding of the nature of gender roles in the concept of the fang family and its differential socialization system. In this sense, a quantitative approach supported by the descriptive method is necessary, and implies that the researcher has an overview of what he/she intends to know.

In addition, it should also be noted that in order to better understand the issue to be developed, the technique that has been used is the survey, while the data collection instrument has preferably been a questionnaire to gather information on this topic. The questionnaire that has been used as an instrument of data collection is the one that has facilitated the obtaining of the data that are handled in this research, in order to reach conclusions. Taking into account that this research is carried out in Equatorial Guinea, the population on which this work has been carried out is the Fang of the aforementioned country. However, knowing that the Fang are a majority ethnic group in our society, the sample selected was 402 citizens in the city of Bata. This is a very representative sample because the majority of the Fang tribes are represented in this city. Therefore, the data obtained with this sample are perfectly generalizable to the entire Fang population of Equatorial Guinea.

5. Analysis and discussion of results

The results presented below are the result of a survey of a very select population. We believe that these data, generated through the use of the Statistical Package for the Social Sciences (SPSS), provide a well-founded picture of gender roles and differential socialization within the concept of the fang family.

		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	Sí	205	51,0	51,0	51,0
	No	197	49,0	49,0	100,0
	Total	402	100,0	100,0	

Table 1. Do you think that gender roles in the fang family concept contribute to women's subordination?

According to the results obtained from this question, 51.0% of the respondents admitted that gender roles contribute to the subordination of Fang women. However, we were also struck by the 49, 0% who think that these gender roles are not the cause of women's subordination.

What has really been found is that most of the surveyed group does not know what gender roles are, however, after explaining that it referred to behaviors, behaviors to be performed by men and women, they began to admit that these gender roles exist.

		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	Through the school	69	17,2	17,2	17,2
	Through a patriarchal system	182	45,3	45,3	62,4
	Through the family itself	151	37,6	37,6	100,0
	Total	402	100,0	100,0	

Table 2. Where is differential socialization and gender roles promoted?

Gender roles, as well as differential socialization, are the result of the Fang patriarchal system, as confirmed by 45.3% of the group surveyed. Gender roles are a manifestation of the Fang patriarchal system that fosters above all differential socialization, resulting in subordinating the feminine to the masculine.

All of this generates behaviors that are seen as normal, but which in reality are the product of what has been taught in the family. It is also important to highlight that 37.6% of the people surveyed believe that the family is the seed of gender roles and differential socialization.

		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	Sí	205	51,0	51,0	51,0
	No	197	49,0	49,0	100,0
	Total	402	100,0	100,0	

Table 3. Do you think that differential socialization limits women's personal development?

If we have evidenced anything throughout this research, it is that within the concept of the Fang family, boys and girls are socialized differently. Thus, 51.0% of the people surveyed consider that these roles and the way people are socialized within the concept of the Fang family limit women's personal development by confining them to the private sphere, where they dedicate themselves to domestic chores and caring for children. In contrast to this position, there are 49.0% who reject that differential socialization limits women to the private sphere, where they devote themselves to domestic chores and caring for children.

		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	Sí	321	79,9	79,9	79,9
	No	81	20,1	20,1	100,0
	Total	402	100,0	100,0	

Table 4. Do gender roles, products of differential socialization, foster the sexual division of labor in the fang family concept?

For 79.9% of the people surveyed, gender roles encourage the sexual division of labor, some have stated that because they see that they must do certain tasks that have been assigned to them. Thus, for example, women are engaged in ironing or cooking, while men are simply looking for sustenance for the family. The result of this differential socialization is, as we have seen above, the confinement of women to the private sphere represented by the home. This is due to the Fang patriarchal system which, with this way of socializing, creates a differential society to which the Fang family is no stranger. In addition, although 20.1% think that gender roles do not promote the sexual division of labor, this is probably because they do not really know what gender roles are, since they are topics of recent incorporation in the study of the social reality of Equatoguinean society from the point of view of gender relations.

6. Conclusion

The differential socialization system observed in the concept of the Fang family encourages the transmission of traditional gender roles, where the man is generally educated as a dominant being, while the woman must show obedience, submission and weakness. Although the family is one of the major institutions of the Fang ethnic group, it is the main

transmitter of the roles of dependence that women assume within it. In this sense, this research has started from the thesis that the concept of the Fang family promotes differential socialization through the transmission of gender roles that turn women into submissive, strengthening the patriarchal system on which this model of socialization is based, with the purpose of analyzing and better understanding a subject that has very little literature, since they are current social issues that until now had not been raised in the light of gender relations, based on the component of differential socialization.

The thesis presented has been argued on the basis of some evidences such as the presence of the sexual division of labor which is the manifestation of the patriarchal system that creates gender roles and that at the same time are sustained by the fang patriarchal system. However much apology one may want to make of the Fang family model, which at the same time represents the conception of the African family, there is something inescapable, and that is the presence of gender roles that are fostered by the differential socialization that is carried out from the family. Therefore, it is an evident fact that in the concept of the Fang family there is a segmentation between men and women, which is reinforced at school, thus provoking the social inequalities established from the first socialization, which inexorably leads to the differentiation of roles and spaces.

A society where this type of socialization that favors one gender while undervaluing the other, preferably female, institutionalizes patriarchy. Moreover, it pays obeisance to it by not promoting inclusive models of education for all. In view of this, it is important to be forceful in abolishing this system of segregation, which can be fought exclusively through education, but it must be an egalitarian education.

While with the sexual division of labor, girls continue to be educated or socialized to dedicate themselves only to the care of their sons and daughters and to please men, it will be difficult to break the patriarchal system, therefore, the solution is to change the current differential socialization model to give way to one more committed to exploit and value the skills and abilities of people that do not depend on one's gender.

With the current differential socialization system of the fang family model where everyone educates (parents, uncles, cousins, biological brothers, tribal brothers, grandparents, etc.), gender roles are aggravated, which cause girls to be socialized to develop behaviors such as dependence and submission, repressing their cognitive capacity because they are confined to the private sphere where they are exclusively dedicated to raising children and serving men.

As gender roles are a sociocultural construction present in the concept of the fang family, it challenges us to study the way in which they foster social inequality, based on differential socialization. For this reason, it is relevant to carry out a series of studies aimed at making these situations visible in order to promote changes that seek to establish a more egalitarian system between the sexes. Education and the promotion of opportunities are an ethical and moral requirement for the development of people's capabilities regardless of their sex and gender. Holding on to customs and traditions should not imply undervaluing anyone, but rather fostering the development of the human person.

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REVISTA CÁTEDRA

El concepto de culpa desde los principales referentes de la filosofía contemporánea

The concept of guilt from the main references of contemporary philosophy

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Resumen

El manuscrito discute sobre el concepto de culpa desde Nietzsche, Heidegger, Jaspers y Ricouer como principales referentes de la filosofía contemporánea que han abordado este tema. En el artículo se reflexiona acerca de las distintas concepciones de culpa y su relación con el sujeto moderno, su existencia, la trascendencia y la responsabilidad. En una época tecnificada, dominada por la tendencia utilitarista y consumista, la producción en serie y la enajenación que vive el ser humano respecto a sí mismo, se hace indispensable repensar en torno a la autenticidad, a la individualidad y a la subjetividad en contextos singulares como el nuestro. La metodología utilizada para la estructuración de este documento se respalda en las principales directrices de la investigación cualitativa, se apoya en la revisión bibliográfica, el análisis de textos, y consecuentemente, el método hermenéutico para la interpretación de las teorías, categorías, principios, doctrinas y concepciones. El artículo se encuentra estructurado en cuatro apartados: El primer apartado presenta una discusión sobre el concepto de culpa y el nacimiento de la conciencia desde la perspectiva nietzscheana. El segundo apartado se refiere al concepto de culpa en la filosofía de Martín Heidegger, explica la función que cumple la culpa en el esclarecimiento del sentido del ser.

El tercer apartado realiza una exposición sobre la relación entre el concepto de culpa y trascendencia según Karl Jaspers. Finalmente, el cuarto apartado, indaga sobre la relación planteada por Ricouer acerca del concepto de culpa y la responsabilidad.

Palabras clave

Autenticidad, culpa, existencialismo, filosofía contemporánea, responsabilidad, trascendencia.

Abstract

The manuscript discusses the concept of guilt from Nietzsche, Heidegger, Jaspers and Ricouer as the main referents of contemporary philosophy that have addressed this issue. The article reflects on the different conceptions of guilt and its relation to the modern subject, its existence, transcendence and responsibility. In a technified era, dominated by the utilitarian and consumerist tendency, mass production and the alienation that the human being lives with respect to himself, it becomes indispensable to rethink about authenticity, individuality and subjectivity in singular contexts such as ours. The methodology used for the structuring of this document is based on the main guidelines of qualitative research, it is supported by the bibliographic review, the analysis of texts, and consequently, the hermeneutic method for the interpretation of theories, categories, principles, doctrines and conceptions. The article is structured in four sections: The first section presents a discussion on the concept of guilt and the birth of conscience from the Nietzschean perspective. The second section refers to the concept of guilt in Martin Heidegger's philosophy, explaining the function of guilt in the clarification of the meaning of being. The third section makes an exposition on the relationship between the concept of guilt and transcendence according to Karl Jaspers. Finally, the fourth section explores the relationship raised by Ricouer on the concept of guilt and responsibility.

Keywords

Guilt, contemporary philosophy, existentialism, transcendence, responsibility, authenticity.

1. Introduction

The manuscript discusses the concept of guilt from Nietzsche, Heidegger, Jaspers and Ricouer as the main referents of contemporary philosophy that have addressed this issue. The article reflects on the different conceptions of guilt and its relation to the modern subject, its existence, transcendence and responsibility. In a technified era, dominated by the utilitarian and consumerist tendency, mass production and the alienation that the human being lives with respect to himself, it is essential to rethink about authenticity, individuality and subjectivity in unique contexts such as ours.

The concept of guilt is a polysemic term, it has several meanings that come from different fields such as ethics, law, morality and existential itself; likewise, there are some connotations, differences and similarities regarding its sense and meaning, the most outstanding conception is related to the term debt. In existentialist thought, guilt is the core of existence, since it fulfills the function of claiming the authenticity of being. The aim of this article is to reflect on the concept of guilt from the existentialist point of view in relation to the subject, transcendence and responsibility.

2. The Concept of Guilt and the Birth of Conscience in Nietzsche

Nietzsche, in his research on moral sentiments, made a tour on the origin of such sentiments, as well as their evolution throughout time. At the beginning, this thinker, based on the works of those whom he calls "English psychologists" and especially supported by Paul Ree, came to the conclusion that all moral concepts do not have a divine origin, but rather are the result of the different evolutions of civilization, they are the product of the social life of the human being. For Nietzsche (2011), the analysis on moral sentiments of these English psychologists possesses "a perverse taste for the strange, the painfully paradoxical, the problematic and absurd of existence" (p. 50), since they show that, behind all concepts, the human being has clothed them with a divine or holy aura, where rather biological, instinctive and animal issues are to be found.

Likewise, for Nietzsche (2011), "those researchers who look at the soul with a microscope" (p. 50) have approached a truth different from what has already been taught by religious tradition, for this truth expresses the most human of moral feelings is a "simple, rough, ugly, nauseating, unchristian, amoral" truth (p. 50). This view of Nietzsche's is based on the fact that these researchers argued that altruistic acts have remained within the various civilizations for utilitarian reasons, i.e., generous actions, selfless actions contributed to the survival of human groups and remained in the memory of peoples because they were functional to gregarious instincts (to groups of people), so that they are not actions that have some value in themselves or some transcendental meaning, but are actions that through habit and their utility have been reproduced throughout history.

On the other hand, while Nietzsche praises the work of these "English psychologists," he argues that their research on the origin of moral sentiments has been sought in the wrong place, since for Nietzsche (2011) the concept of goodness did not arise from some social consensus and neither from any utilitarian sense, but rather "it was the 'good' themselves, that is, the noble, the powerful, the individuals of position and high feeling who saw and valued themselves and their actions as good" (p. 51). In such a way that Nietzsche, in opposition to the common opinion, defended the idea that the concepts of good and bad were employed in the beginning to mark a hierarchical division between the noble, superior individuals and the servile, mediocre, vulgar and weak individuals.

According to Nietzsche (2011) the noble classes are characterized by "their indifferent and contemptuous attitude towards security, the body, life, well-being" (p. 68), and also present certain characteristics that in modernity would be observed as perverse, among which are a tendency towards intense pleasure in conquest and war, a tendency towards cruelty and enjoyment in destruction, and most importantly, a tendency towards the creation of authentic and original values, going so far as to argue that these types of individuals are destined to represent the best of humanity, i.e. authentic humanity; They are individuals who are beyond good and evil, and close to the ideal of the "superman", that is, of that human being who has overcome all kinds of schemes, who has overcome the lowest of humanity, who responds only to his "will" and whose goal is the exceptional, that is, the creation of higher values than those that characterize the Christian life marked by conformism, mediocrity and submission.

Moreover, for this type of people the usefulness of actions is of little importance, since they are individuals who do not focus, as Nietzsche says, on "prudential and utilitarian calculation" (p. 51); they are those who by their very nature and physical constitution tend to squander strength, concentrate on action, and overflow with life and powerful instincts. On the contrary, inferior, servile and mediocre human beings historically constituted the opposite of the superior subjects who called themselves "good". In such a way that, at the

origin of moral sentiments, it was the mediocre who by their very nature tended towards thrift, prudence and utility, and who in the eyes of the superior beings represented all that was low and "bad" in society.

The above is evident in the explanation of Nietzsche who maintains that the origin of moral sentiments should not be found in some kind of social consensus that was reproduced throughout history for its utilitarian value, but rather should be sought in the historical struggle that took place between the class of lords and the class of slaves, between the class of warriors and the class of priests; since it was a historical struggle that to this day remains and is expressed in new forms of domination and submission. Among these new forms of domination and submission, Nietzsche looks at the continuous struggles for social egalitarianism, which in his opinion is a disguise that the weak classes employ in their attempt to domesticate the dominant classes (Nietzsche, 2011).

Nietzsche realized that over the centuries the winner of this struggle was the class of priests, a class characterized by a weak physical constitution, but whose deficiencies are subtly hidden in the kind of contemplative, ascetic and spiritual life they live. The priests, under this subhuman appearance that they try to provide, generate in the people a certain fear, since they are individuals who present themselves as the receivers and transmitters of divine messages, who are distinguished by habits that frighten others such as self-flagellation and other types of self-harm. In addition, the ascetic life led by this class of individuals generates within the public sensations of mystery and depth, being this artifice one of the main resources to triumph over the warrior classes.

It is important to emphasize that both the warrior class and the priests seek, according to Nietzsche, domination by different means; the warriors do it through conquest and force, the priests by means of different artifices, and to which others would be added such as the remorse they expose on the people through their vision of sin, and the most important: the love and crucifixion of their martyrs. Likewise, the type of means employed by the class of priests responds to a vengeance against the dominant classes; addressing to that rebellion of the slaves that Nietzsche observes in the triumph of Christianity.

According to Nietzsche (2011) "the rebellion of the slaves in morality begins when ressentiment itself becomes creative and produces values: the ressentiment of those individuals who are prevented from true reaction" (p. 63). This rebellion represents an explosion of all the resentments accumulated by the servile classes, since this class, not possessing the strength to fight directly against the ruling classes, planned in the depths of their being different spiritual forms to take revenge against those who subjected them by force.

In fact, for Nietzsche, that which the peoples call spirit or conscience is synonymous with the triumph of the priestly classes, because these classes in their search for artifices to triumph and dominate, used spiritual concepts to alter the forces of the dominant classes. In such a way, the triumph of the slaves was based on moving the real struggle to a spiritual plane, to the interior of the individuals, being born under this new form of struggle: the concepts of conscience, guilt and remorse. Henceforth, the struggle between masters and slaves became deeper, more spiritual and more subtle.

It should be emphasized that this battle, once it acquired a deeper and more spiritual tone, also brought about an inversion in the hierarchy and division of moral concepts; an inversion whereby the concept of good used by the superior and strong individuals to characterize themselves, was assumed and re-invented in a totally different sense by the class of inferior individuals. The inversion of the scale of values employed by the slave

classes was based on a new division between the good and a concept that they themselves introduced, the concept of "evil", a concept that according to Nietzsche was born out of the ressentiment and hatred of the servile classes.

Thus, Nietzsche (2011) analyzes that between the concept of good originally employed by the upper classes and the concept of the servile classes, there is a great difference: "the first is a later creation, something additional, a complementary color; the second instead, is the original, the beginning, the real action in the conception of a slave morality" (p. 67), and further on he points out that the radical antithesis of the concept of good employed by the servile classes, is a concept that designates everything that has the appearance of perversity, leisure, pleasure in destruction and cruelty, that is: the evil, and which is a designation used by the slave class to take revenge and discredit the properties of the noble classes.

Once Nietzsche reaches this conclusion, he is not only authorized to point out that the hierarchy of values of modernity is based on an inversion that began with the rebellion of the slaves and is perfectly identifiable in Platonism and the ethical philosophy of Kant, but to affirm that culture as it is understood today is the materialization of the same rebellion and the result of a falsification of human nature. Culture has become in the hands of the slave classes an instrument for domesticating the forces of those select individuals who present overflowing health and instincts of domination and conquest. Likewise, culture under the rebellion of the slaves has become contrary to life, to their innocence and in general contrary to their natural inclination towards the creation of new and original values, while values such as equality, mercy or self-sacrifice that characterize culture, are signs of weakened instincts, of a will to nothingness that in turn is present in Christian values.

Then, taking into account these aspects on the rebellion of the slaves and the origin, as well as the evolution of moral sentiments, it can be indicated that the concept of guilt in general terms expresses a debt that a subject contracts with a creditor. This concept evolved as culture did; in its origins it was only a physical punishment deserved by a subject who had committed an injury against another person and only after the battles between priestly classes and war classes were internalized in the subject, did the concept of guilt acquire its current meaning.

According to Mejía (2002), in the dynamics between the punished and the punisher there was a logic of pleasure and displeasure; the enjoyment provoked by punishing was a form of reward on the part of the injured party, since according to Nietzsche (2011) "making suffer produces well-being, since the injured party exchanged the harm, as well as the displeasure it produced, for an extraordinary counter-joy: making suffer" (p. 75). These punishments, which at first were only physical, slowly became internalized in the form of a spiritual battle, thus giving birth to a series of moral remorse along with conscience. In this way, the debt of the first human societies was internalized in the conscience, giving birth to the concept of guilt.

The rebellion of the slaves introduced the concept of guilt to triumph over the master class; they used this concept to establish an insurmountable debt between the human being and a superior entity, and in this way ensure total domination over culture and universal history. The Christian religion, as an expression of the priestly classes, was used to ensure the triumph of these servile classes; a religion built on the myth of original sin, on a myth that established an insurmountable debt between man and God, a myth on which all forms of remorse and guilt are based. This is pointed out by some scholars such as Rojo (2017) "all religion is founded primarily on the idea of sin, that is, the feeling of guilt experienced for not being able to comply with the prescribed norms. Without this conception, religion loses all meaning" (p. 121).

Moreover, from the perspective of Christianity, guilt translates the ontological debt that the human being has with God, since the human being has not created the universe, nor himself, but God is the creator of all things. In the personalist philosophical literature one can find arguments such as those of Mounier, for whom the human being, unlike animals, experiences uncertainty not only about the origin of all things, but also about the permanence of the world he inhabits. And in this need for the search for certainties, the idea of God is presented as one of the most accepted. Consequently, the human being has a relationship of dependence with God, that is, with his creator, so that, if man commits moral faults, he fails God, and this is what guilt consists of, in this sense, man has an ontological debt with God, since it is he who has given 'being', the possibility of existing and the possibility of transcending (Mounier, 2000).

According to Elders (1983) the concept of guilt, referring in a theological way, accounts for "a voluntary disturbance of man's ordination towards God" (p. 173) and which is expressed in the lack of moral responsibility. Thus, that rebellion of the slaves which began against the seigniorial classes and which gradually acquired a spiritual subtlety, until it ended in an inner struggle, was from the beginning a planned rebellion, which used means such as culture and religion to tame the impulses and instincts of the strong individuals. Conscience together with guilt is born under the form of a spiritual battle used by slaves, and it was precisely this feeling that Nietzsche fought throughout his life, since his purpose was to recover the innocence of the human being; it is not a novelty that the last figure of the three transformations that Nietzsche exposed in his work Thus Spake Zarathustra, is precisely a child (after the camel and the lion).

In the following section the concept of guilt from the existentialism of Jaspers and Martin Heidegger is presented. The difference between the ways of approaching the concept of guilt in these authors consists in the fact that for Jaspers guilt has a psychological and moral aspect that must be discovered; while for Heidegger, guilt fulfills a function of clarifying the meaning of being.

3. Guilt and the clarification of the meaning of being according to Heidegger

Before beginning with the development of this section, it is important to indicate that Heidegger's existentialist philosophy arises as a response to the tragic events of the two world wars of the twentieth century. The central theme of Heidegger's philosophy is existence; one of the reasons why this became the main concern of this author was the alienation experienced by man in the twentieth century. According to Prini (1957), the alienation of man was denounced by existentialism under:

> [...] the twofold aspect of a loss of the personal character of existence, within the suggestions and impositions always more linked to an anonymous community and in the automatism of a life and a world always more rigorously organized by technical progress. (p. 10).

In this new world, the masses or crowds emerged, which according to Heidegger (2003) constituted the impersonal domain of collectivism, while for Marcel (1964) this event reflected "the suffocating sadness of a world organized according to the idea of function" (p. 74). In this context, Heideggerian existentialism arises under a feeling of deep discontent for a man who did not find himself in the world he himself built. Then the task was to find out the meaning of existence and vindicate the authenticity of the individual. To this end, Heidegger gave a special role to the concept of guilt.

Heidegger in his analysis of that which is above the ontic, that is to say of everything that is outside the daily, political and ethical questions, concentrated on the structure of the Dasein, the structure of that which is more proper and immediate to the human being: his existence. To this end, he will develop, as Redondo (2001) indicates:

> [...] a type of conceptualization that in the history of thought had only appeared on the occasion of the expression of a certain type of experience. It is the conceptualization with which the tradition had tried to give an account and expression of the search for the self by a subject who feels fallen, estranged, lost and dispersed and who tries to collect himself in order to focus on what is most proper and genuine in himself, to be truly with himself, and who therefore has to begin by searching for himself. (p. 27).

Heidegger's search for the structure of existence begins with a problematization of the meaning and authenticity of Being-there (Dasein), giving the form of a conceptualization articulated to the experience of what Heidegger calls the "confessional" structure of the subject or the structure of the subjectivity of the one who searches for himself, also indicates that the human being is an entity who is interested in his being, a being who can know and experience himself in authenticity or in inauthenticity, between the possibility of knowing himself or losing himself (Heidegger, 2003).

On the other hand, as Redondo (2001) indicates, the structure of Dasein has "a world articulated as a space of relevance, remissions and significations, in which the entity shows itself to us in what it is, this world being nothing but a determination of existence itself" (p. 28). This means that the world is one more modality of the being of Dasein, since the world is a space that founds the human being himself through his existence; it is the space where existence relates to itself, to others and to objects. In Heidegger's terms, existential analysis reveals that Dasein appears in the form of being-in-the-world. The world is a space constructed by Dasein, where things appear in a network of meanings and relevance.

The human being is projected in a world that exists without previous meanings and that only finds meaning from existence. From this point of view, the human being is thrown into existence; he is the only one who has the duty to take charge of himself. Faced with a world that has no previous meanings, existence, as Redondo (2001) points out, "is apprehended based on the possibility of the absolute impossibility of itself, that of death, and that is the unassailable possibility and the one in which each one cannot be substituted by anyone" (p. 29).

Therefore, the human being faces anguish and two constituents of the structure of Dasein appear: care and guilt. On the one hand, care is defined by Heidegger as the moment of projection and facticity in which existence opens itself to the world. The human being in his condition with the world has to relate to objects; he is concerned with things, shows attachment and addiction to them (Heidegger, 2003). However, existence once it is thrown into the world of things ceases to be authentic. In the care and preoccupation with things, Dasein is far from itself, it is occupied with the activities that custom dictates and that all human beings do, such as thinking, reading or choosing.

Faced with anguish, the human being can freely opt for the preoccupation of everyday things, thus fleeing from anguish, or for the existential abyss that opens up with the question "what for? The human being has the capacity to choose; he can choose between worrying about the everyday and thus living in the oppression of the near, or he can choose the possibility of being able to be according to Heidegger, and thus heed the call of conscience

that deep down tells the human being that existence is heading towards death. This is also explained by Ballbé (1964):

> Our freedom consists in choosing between being in the oppression of proximity, that is, in impersonal individuality, or taking the risk of pilgrimage, recognizing our finitude, as witnesses of a transcendence that is continually hidden, but which offers the unrealizable possibility of authentic existence. (p. 1).

To live in everyday life and in the preoccupation with things is to opt for an inauthentic existence, while the recognition of human finitude is a possibility for authentic existence and for transcending. In this free decision, guilt arises, and for this reason it is considered, according to Ballbé (1964), as "the core of existence" (p. 1). Existential guilt must be distinguished from qualitative guilt. The first refers to the flight from the possibilities of being able to be, that is to say, from authenticity. The second refers to the guilt that the human being experiences in everyday life, when he commits some mistake regarding the value of coexistence and which have been conventionally agreed upon.

The human being escapes from questions about the meaning of being, since they provoke anguish and lead to some kind of existential crisis. Society offers multiple ways to avoid this encounter with anguish, which are presented as incentives shared by human beings as a whole. In addition, the human being, when facing the existential crisis, feels the burden of his freedom, of being someone singular and different from others. To escape the anguish of freedom and individuality, he wishes to be integrated into society once again, as if he were a lamb that has lost its flock.

Society continually creates mechanisms to avoid anguish: amusement centers, shows, serials. The important thing is to be part of the masses. The human being, instead of choosing for himself, prefers to submerge and get lost among the masses. In other words, the emergence of the masses is a form of collective discharge in the face of anguish, in the face of the possibility of being. For Ballbé (1964) of "the multiple forms of unloading of the self -individual and collective- the simplest consists in the concealment or repression of the experience of guilt, with which it is possible to eliminate from the field of consciousness the fault committed" (p. 5).

When the human being adopts this way of existing, he loses his individuality, becoming an anonymous subject who lives in inauthenticity. Existential guilt arises precisely in this decision that the human being has taken, since it reminds him of the renunciation of his possibility of being able to be and the responsibility that he should have had with himself. As Acevedo (2013) indicates, guilt "has a fundamental ontological purpose; that is, its goal is to clarify a dimension of being-there in order to prepare the ground to sufficiently pose the question that asks about being and its meaning" (p. 56).

For Heidegger (2003), guilt is found in the depths of being itself, being the voice of conscience, which points out to man his guilt. This thinker by means of transcendental analytics, which is a phenomenological study, found that guilt constitutes a fundamental structure of human existence and that consciousness discovers it. According to Acevedo (2013), this call of conscience shows the "being-there immersed in the everydayness of middle or medium term dominated by the self or one thrown into the world and fallen into the gossip, the greed for novelties, ambiguity and fear" (p. 58) and demands from him, to abandon the impropriety to assume himself as himself.

It is necessary to emphasize that this call is not made by conscience from discourses, since according to Heidegger (2003) "conscience speaks only and constantly in the mode of silence" (p. 321). The conscience reminds man that he is guilty for losing himself in everyday life, for making of existence a business occupied with worldly affairs, instead of assuming his finitude, since the acceptance of this fundamental dimension of the human being implies taking charge of his possibilities as an authentic existence. Once the human being accepts his finitude, he heeds the call of conscience and prepares himself for resolution. In the words of Heidegger (2003):

> The state-of-openness of the being-there implicit in the will to be conscious is constituted [...] by the encounter of anguish, by understanding as projecting itself upon its own most guilty being and by speech as silence. We call this marked self-opening, attested in Dasein itself by its consciousness - the silence of projecting itself, disposed to anguish, on its own most guilty being - the resolution. The resolution is a marked mode of the opening. (p. 154).

However, according to Acevedo, resolution does not imply the disappearance of guilt, because despite opting for authenticity, guilt survives (Acevedo, 2013). Although the positive aspect of resolution consists in the acceptance of the limitations of existence, in its finite nature and in the rejection of the illusions offered by society, guilt remains, because the human being, faced with the anguish of existence, tends to forget himself again.

4. Guilt as a limit situation according to Jaspers

One of the central concepts of Jaspers' philosophy pertains to 'limit situations', which according to this author have the function of awakening consciousness, similar to the function that Heidegger attributed to the concept of guilt. According to Jaspers, guilt is one of these 'limit situations' which, like suicide, struggle or illness, are accompanied by some kind of existential crisis. The importance that Jaspers attributes to these 'limit situations' consists in the fact that they have a positive function for the constitution of individuality, since they bring the subject face to face with himself. In these 'limit situations' the subject experiences the fragility of his finite condition, and for this reason they are situations that awaken the subject from everyday life, pointing out to him his possibilities as an existence and the need to be himself, to be what he is. At this point it is important to take into account what Nietzsche (1951) said about his illness, since illness and guilt are two limit situations that reveal human finiteness:

> [...] The whole meaning of the terrible physical pains to which I have been subjected lies in the fact that, thanks to them, I was torn away from an erroneous - that is to say, a hundred times too low - conception of my life's mission. And as I count by nature among modest men, the most violent means are necessary to bring me back to myself. (p. 265).

As can be seen, the man who wishes to resolve with himself, finds in the disease an opportunity, he feels the call of his conscience, who demands him to be himself. Nietzsche's illness was a limit situation of the tragic theater of life as considered by Unamuno (1983) who presents to the human being the opportunity to think of himself as a project, as a possibility, as the only owner of his destiny. The disease, if accepted and attended to, provokes in the subject an existential crisis that awakens him from his inert state, from that state in which he was outside himself, occupied with things that kept him away from anguish and turned him into an anonymous subject who was lost in the mass. He who rejects

limit situations is condemned to reject his authentic existence. This flight, according to Ballbé (1964):

> [...] lead to the failure of the possibility of being oneself. The appearance of guilt, which manifests itself as an existential crisis, accuses us of the desertion committed. The temporal irreversibility and the horizon of death give sense to the anguish before the condemnation that demands, peremptorily, repentance and conversion to authenticity. The sense of this crisis defines what we call existential guilt (p. 4)

This means that the human being finds himself on the horizon of death, because in front of it he has to declare what is the meaning of his existence, that is to say, why and for what? These are the questions that determine the lifestyle of every man who has decided to be himself. On the other hand, guilt, unlike social punishment, is individual, subjective and represents the remorse generated by the damage caused to a value that the human being considers as unique and intrinsic to himself. And this value is the subject himself and his existence.

Existential guilt demands the transformation of the subject into existence, authenticity, and the call of conscience is made through signs instead of words. Basically, what the conscience expresses through guilt is a continuous search for the why, which may never find meaning unless the authentic, free and individual human being defines it. That is to say, in the background is nothingness, which incites the individual to invent a meaning and to create a project for himself. For this reason, it is correct what Ballbé (1964) indicates, who considers that "guilt is the revealer of our original debt and moves man to make an incessant pilgrimage in search of a truth that is always hidden and appears after each denial" (p. 10). This means that the human being has an unbreakable debt with himself, which is presented to him when he forgets himself. This is what existential guilt consists of.

Guilt as a limit situation indicates that human action brings inevitable consequences. Since human beings do not have the ability to predict with certainty the consequences of their actions in the future, they can feel guilt. Thus, guilt is inseparable from life and is closely related to its finite character. Decisions that are part of existence may end up hurting or wounding someone. It is important to point out that the omission of action is also a decision that can have inevitable consequences. Thus, the human being is condemned to experience guilt.

Jaspers' idea of guilt can be connected with Sartre's (1992) perception of human freedom, since the human being is condemned to be free, condemned to face his responsibilities; thus he points out in his words "when we say that man is responsible for himself, we do not mean that man is responsible for his strict individuality, but that he is responsible for all men" (p. 33). Likewise, it should be noted that guilt, in addition to belonging to human beings, corresponds to the epoch that they themselves have created. Jaspers (1992), speaking about the guilt and responsibility of Germany in the Second World War, indicates that:

> [...] in my situation I bear the responsibility for what happens because I did not intervene; if I can do something and I do not do it, I am guilty of the consequences of my abstention: Thus, whether I act or not, both behaviors have consequences; in all cases I irremediably incur in the guilt. (p. 120).

Although guilt is a limit situation from which the human being cannot escape, there is a possibility of transcending it, which Jaspers found in philosophy and communication.

Philosophy according to this author is continuous communication, an activity by which the other is called; whose main objective is to investigate and clarify the meaning of existence. This consists in the fact that among people who philosophize about matters that concern them, there is no authority. In this way, communication among equals allows us to understand the other as a free subject, whose duty is to fulfill himself.

The human being aims to be what he is; he is the only being who is a possibility, in his freedom he realizes himself and in communication he transcends himself together with other free subjects. Thus, if guilt is a limit situation that forces the human being to choose for his authenticity, it can be affirmed that communication allows this possibility. This aspect was not unknown to Sartre, since he was concerned about the importance of dialogue with the other.

Then, it can be summarized that guilt is a way of awakening the consciousness from its numbness, which is expressed through an existential crisis that puts the subject in front of himself. This approach brings a problem related to responsibility and the life of others, since guilt from this perspective would seem to be an individual and selfish situation, which bears no relationship with the other, an aspect that leads to the next section in which the relationship between guilt and responsibility from Ricoeur's perspective is reviewed.

Ricoeur in his book "Finitude and Guilt" (2004) deals with the lability of the human being towards evil, from the research on the structure of human reality that is generally divided between voluntary actions and involuntary actions. It should be noted that his research on the lability of the human being is done through the study of symbols that are at the basis of Western thought. In this way Ricoeur (2004), starting from the 'language of confession', tries to understand the content of symbolic words that come from the religious tradition such as stain, sin, guilt. Thus, to find the meaning of guilt it is important according to this author "an exegesis of the symbol, which requires certain rules to decipher, i.e. a hermeneutic" (p. 14).

Ricoeur (2004) through this procedure concludes that lability towards evil is expressed in the act of confession of a religious conscience. Segovia (2015) explains, confession "is the tone with which the human being goes about confessing to himself the learning of being, which is both pleasurable and painful" (p. 137). Although pain and fear are distinct, they develop in parallel, since both are related to the guilty conscience. The former because it is related to an action considered forbidden, and the latter because it is determined by some taboo of the sacred.

From this hermeneutic analysis, two important aspects can be gathered. The first consists in the fact that lability towards evil is a possibility that reflects the tragic experience of existence itself, because in it is recognized the possibility of failure. The second refers to the fact that freedom is possible when one takes responsibility for one's own guilt. In assimilation and repentance lies the possibility of rebuilding oneself. This practice of religious character is ancient and still determines the human conscience.

Aunque la culpa es una situación límite de la que el ser humano no puede escapar, existe una posibilidad de trascenderla, que Jaspers encontró en la filosofía y la comunicación. La filosofía según este autor es una comunicación continua, una actividad por la que se llama al otro; cuyo objetivo principal es investigar y aclarar el sentido de la existencia. Esto consiste en que entre las personas que filosofan sobre los asuntos que les conciernen, no hay autoridad. Así, la comunicación entre iguales permite entender al otro como un sujeto libre, cuyo deber es realizarse.

El ser humano aspira a ser lo que es; es el único ser que es una posibilidad, en su libertad se realiza y en la comunicación se trasciende junto a otros sujetos libres. Así, si la culpa es una situación límite que obliga al ser humano a elegir por su autenticidad, se puede afirmar que la comunicación permite esta posibilidad. Este aspecto no era desconocido por Sartre, ya que se preocupaba por la importancia del diálogo con el otro.

Entonces, se puede resumir que la culpa es una forma de despertar la conciencia de su adormecimiento, que se expresa a través de una crisis existencial que pone al sujeto frente a sí mismo. Este planteamiento trae consigo un problema relacionado con la responsabilidad y la vida de los demás, ya que la culpa desde esta perspectiva parecería ser una situación individual y egoísta, que no guarda relación con el otro, aspecto que nos lleva al siguiente apartado en el que se revisa la relación entre culpa y responsabilidad desde la perspectiva de Ricoeur.

Ricoeur en su libro "Finitud y Culpabilidad" (2004) aborda la labilidad del ser humano hacia el mal, a partir de la investigación sobre la estructura de la realidad humana que generalmente se divide entre acciones voluntarias y acciones involuntarias. Cabe destacar que su investigación sobre la labilidad del ser humano se realiza a través del estudio de los símbolos que están en la base del pensamiento occidental. De este modo, Ricoeur (2004), partiendo del "lenguaje de la confesión", intenta comprender el contenido de palabras simbólicas que provienen de la tradición religiosa como mancha, pecado, culpa. Así, para encontrar el significado de la culpa es importante según este autor "una exégesis del símbolo, que requiere ciertas reglas para descifrarlo, es decir, una hermenéutica" (p. 14).

Ricoeur (2004) a través de este procedimiento concluye que la labilidad hacia el mal se expresa en el acto de confesión de una conciencia religiosa. Según explica Segovia (2015), la confesión "es el tono con el que el ser humano va confesando a sí mismo el aprendizaje del ser, que es a la vez placentero y doloroso" (p. 137). Aunque el dolor y el miedo son distintos, se desarrollan en paralelo, ya que ambos están relacionados con la conciencia culpable. El primero porque está relacionado con una acción considerada prohibida, y el segundo porque está determinado por algún tabú de lo sagrado.

De este análisis hermenéutico se desprenden dos aspectos importantes. El primero consiste en que la labilidad hacia el mal es una posibilidad que refleja la experiencia trágica de la propia existencia, porque en ella se reconoce la posibilidad del fracaso. El segundo se refiere a que la libertad es posible cuando se asume la responsabilidad de la propia culpa. En la asimilación y el arrepentimiento está la posibilidad de reconstruirse. Esta práctica de carácter religioso es antigua y sigue determinando la conciencia humana:

> [...] the affective force of reproach, of self-reproach, becomes fundamental in this feeling, knowing and saying guilty. The imputation remains in the dimension of exteriority if the self does not ascribe to itself the responsibility for actions whose consequences have caused harm (p. 75).

If the accused does not feel guilty, it is impossible for him to value a possible ethical re-signification and even less for him to assume a sense of responsibility. To be responsible and to be guilty are two different things, for as Ricoeur expresses "the consciousness of responsibility is nothing more than an appendix of the consciousness of being overwhelmed in advance by the weight of punishment" (p. 261). On the other hand, responsibility, according to Ricoeur, develops through three temporal dimensions, since it is related to the future (anticipation of the consequences of the action), the past (as a debt) and the present

(accepting oneself today as responsible). This means that the human being is a being reflective enough to consider the implications of his actions.

5. Conclusions

This article discusses in principle the concept of guilt from Nietzsche's thought, finding that this concept in its most original meaning refers to a debt that in the first human societies was based on a dynamic between pleasure and displeasure, between enjoyment and pain, since he who committed some harm had to pay with his own physical pain, and which represented an enjoyment for the creditor. Furthermore, the concept of guilt, as Nietzsche could identify, is related to the birth of culture and the triumph of the slaves' rebellion, since guilt arises as a form used by these classes to tame the instincts of conquest and domination of the strong classes, that is, of those warrior classes that were overflowing with strength.

After this analysis, the concept of guilt was discussed under the concept of Heideggerian existentialism. For Heidegger guilt is part of the structure of Dasein, it arises in the face of the anguish of existence and expresses the possibility of being authentic. Specifically, guilt according to Heidegger is presented as a call of conscience that claims the individual to be itself. In turn, this call of consciousness expressed in guilt was compared with Jaspers' limit situations, finding that both concepts have in common the function of awakening consciousness from its lethargy.

In Jaspers' thought it was possible to identify that guilt involves all individuals, in such a way that action or omission has consequences on others. Therefore, guilt is irremediable and had to be thought in its relationship with responsibility. Under this objective, the concept of guilt is reflected upon in terms of Ricoeur's hermeneutics, reaching the conclusion that the subject who commits some harm and who assumes the guilt of his action, has the capacity to take responsibility and to ethically re-build himself.

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