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The works must be unpublished and refer to topics of history, anthropology, sociology, psychology science, policy public, policy laws, demographics and economics, gender studies and other topics related to Social Sciences.

Presentation of the content

In the first article we present, *Feasibility of a photovoltaic system for irrigation at the Santa Edwiges ranch in the municipality of Delicias, Chihuahua* by PORTILLO-GARCÍA, Lizeth, DELGADO-MARTÍNEZ, Martha Lilia, AGUIRRE-OROZCO, Mario Abelardo and MÁRQUEZ-MONÁRREZ, Olivia, with adscription in the Tecnológico Nacional de México, Campus Delicias, in the next article we present, *Use of design thinking in the creation of an application for the control of diabetes* by LARIOS-CALVA, Margarita, ÁLVAREZ-GARCÍA, Mónica and GUERRERO-IBARRA, Carlos, in the next article we present, *Male chauvinist stigmatization among homosexual peers in Sucre Bolivia* by MANSILLA, Weimar, with adscription in the Universidad Mayor Real y Pontificia de San Francisco Xavier de Chuquisaca, in the next article we present, *Causes Influencing School Failure* by SANTOS, Giovana & TARDIO, Jaime, with adscription in the Universidad Mayor Real y Pontificia de San Francisco Xavier de Chuquisaca.

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Feasibility of a photovoltaic system for irrigation at the Santa Edwiges ranch in the municipality of Delicias, Chihuahua

Factibilidad de sistema fotovoltaico para irrigación en rancho Santa Edwiges del municipio de Delicias, Chihuahua

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Abstract

This investigation was carried out in the Santa Edwiges ranch located in Delicias Chihuahua, the problem of the increase in the costs of electrical energy for pumping water is a situation that reflects a decrease in the profits of the ranch, through this information the option is presented to implement the photovoltaic system as a sustainable option to reduce costs and thus reduce greenhouse gases provided by renewable energy through the use of solar panels, to analyze the information the capital budget methodology was used to determine its feasibility economic and methodological tool to calculate the emission factor of an electrical system and determine the level of carbon dioxide emissions generates electricity. The results of the investigation were the implementation of the system that would be generated with an investment of \$636,000 and would stop emitting around 20,000 kg of CO₂ into the atmosphere, which represents a significant advance for the environmental impact, in relation to the analysis of economic indicators. It was that for the moment, the implementation of solar in Rancho Santa Edwiges is not recommended, since better performance is generated by not making the investment.

Photovoltaic system, Sustainable, Renewable energy, Solar panels

Resumen

Esta investigación se realizó en el rancho Santa Edwiges ubicado en Delicias Chihuahua, el problema del aumento de los costos de energía eléctrica para bombeo de agua es una situación que refleja una disminución en las ganancias del rancho, a través de esta información se presenta la opción de implementar el sistema fotovoltaico como una opción sostenible para la reducción de costos y así reducir los gases de efecto invernadero que otorga energías renovables a través del uso de paneles solares, para analizar la información se utilizó la metodología de presupuesto de capital para determinar su factibilidad económica y la herramienta metodológica para calcular el factor de emisión de un sistema eléctrico y determinar el nivel de emisiones de dióxido de carbono genera electricidad. Los resultados de la investigación fueron la implementación del sistema que se generaría con una inversión de \$636.000 y dejaría de emitir alrededor de 20.000 kg de CO₂ a la atmósfera lo que representa un avance significativo para el impacto ambiental, en relación al análisis de indicadores económicos. Fue que por el momento, no se recomienda la implementación de solar en Rancho Santa Edwiges, ya que se genera mejor rendimiento al no realizar la inversión.

Sistema fotovoltaico, sustentable, Energía renovable, Paneles solares

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Introduction

Currently the use of renewable energies such as the photovoltaic system is increasing, not only for use in homes but also in the industrial and agricultural sector, obtaining electricity in a natural, clean and environmentally friendly way; this technology in turn generates a sustainable development pathway as in some places it is not easy to connect to the electricity grid due to the isolation of their location (SENER, 2012).

According to the Spanish Photovoltaic Union, up to 2015, there was a 25% increase in photovoltaic capacity worldwide compared to 2014. The countries with the highest generation of this technology are: China with 15.2 GW, Japan 11 GW, United States of America 7.3 GW (UNEF, 2016).

In line with this worldwide increase and according to a report issued by the Ministry of Energy, in Mexico in 2015 the installed capacity increased by 6.63 % compared to 2014, for electricity generation from 18,000 (MW) implemented until 2014 to 19,265 for 2015, which represented an increase of 28.31 % of the installed capacity at national level (SENER, 2016). For this reason and the installed capacity in our country, the Rancho Agrícola Santa Edwiges has been affected in terms of the payment of electricity, since in periods of time when the irrigation of crops is more intense, consumption and electricity costs increase due to the pumping of the well and sometimes it has been necessary to reach payment agreements with the Federal Electricity Commission due to the high amount to be paid (Velasco, 2017).

Given these problems, the aim is to find a viable alternative that helps to reduce the cost of electricity, such as the photovoltaic system, and if it also achieves a positive environmental impact, it will be seen as an option for electricity generation. For this reason, the economic feasibility of this system for water irrigation was evaluated to determine its implementation in the Santa Edwiges Agricultural Ranch in the municipality of Delicias, Chihuahua.

Background

Solar photovoltaic energy is the use and exploitation of sunlight to produce electrical energy. This technology was discovered by Alexandre Edmund Becquerel in 1838, which is described as the generation of an electromotive force in a semiconductor device to absorb light radiation, since photovoltaic cells convert light energy from the sun into electrical energy (Sapiain, 2010).

The use of this technology started with a pilot device made by Bell Laboratories in the United States of America in 1954 with low efficiency. Later, in the 70's, the Energy Research and Development Agency was created in the same country and this institution promoted the use of renewable energy sources in industrialised countries; the main countries that benefited from this technology were Spain, Australia, Germany, Japan, among others (Grupo NAP, 2002).

In Mexico, the implementation of photovoltaic energies at national level, particularly in the agro-industrial sector, began to take off in the 21st century, since previously the country did not give great importance to renewable energies. According to the Ministry of Energy (SENER) and the Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA) there are about 120 000 agricultural wells in the country and of these about 70% have high electricity consumption according to the activity they perform (SAGARPA, 2016). According to this information in Mexico, the states of Sonora, Baja California Sur, San Luis Potosí, Nuevo León and Chihuahua have the highest solar irradiation at national level, reaching a maximum of 8-9 kWh/m² as shown in Figure 1, and are considered an ideal area for the development of technologies from renewable resources (Anchondo, 2009).

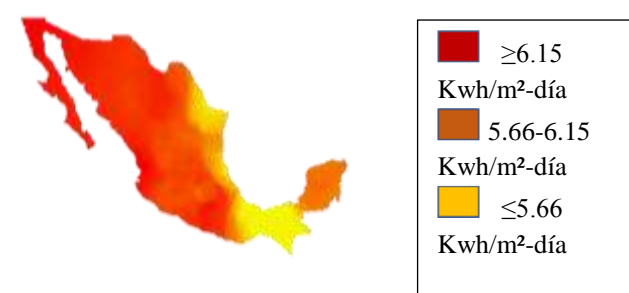


Figure 1 Map of solar radiation in Mexico
Source (SIGER, 2014)

Annual average daily solar radiation
Source: Geographic Information System for Renewable Energy in Mexico (SIGER) of the Institute of Electrical Research.

This is why the state of Chihuahua has made significant progress in terms of solar energy, as it is currently a national leader in the use of solar panels and projects of great relevance such as the Central Los Santos Solar I defined as the second largest nationally, this project will generate approximately 40.1 Giga watt hours (Gwh) of electricity during its first year of installation, equivalent to the energy used by 5,838 households in an annual consumption (Rodriguez, 2016).

In particular, the Santa Edwiges agricultural ranch located in the municipality of Delicias Chihuahua, has a total area of 50 hectares, of which 40 hectares are planted with perennial and annual crops such as alfalfa, corn, chili, and recently the planting of walnut trees, these crops depend heavily on significant water consumption for their optimal development (Velasco, 2016). This property has been affected by increases in the costs of electricity tariffs to achieve the extraction of water recommended for irrigation, these expenses range in consumption of \$0.00 per month when the agricultural well is not much used this in the period from May to October which are considered low season, and in the months of January to April as well as November and December have a higher consumption having a monthly average of \$ 25,000 this causing a deficiency for the ranch (Velasco, 2017).

Problem statement

Currently the Santa Edwiges ranch has the 9M electricity tariff, this is the one used in the service of pumping water for agricultural irrigation in medium voltage, this rate has federal government subsidies implemented in agriculture has a cost of \$0.28 for the first 5000 Kw of consumption and gradually increases as consumption rises.

Due to the irrigation used for the crops grown on the ranch, most of them require a large consumption of water for their optimal development.

Currently, the irrigation module No. 5 provides 10 thousands of water per hectare, this property has been affected by the expense in the consumption of electricity and this has brought as a consequence an indebtedness of the producer towards the Federal Electricity Commission, to mention some, it has come to make payment agreements to settle the economic commitment, in a way it has been a setback for the financial situation of the producer.

It is for this reason and due to the lack of knowledge on the part of the producer about the alternatives of electricity generation in a renewable way such as the use of photovoltaic energy, it will be investigated whether it is feasible or not to achieve the implementation of this system in the agricultural ranch.

Justification.

Nowadays there are other energy alternatives that use a renewable resource such as solar energy, including the photovoltaic system. This technology is used in the generation of electricity used at residential, commercial, industrial and agricultural levels, as well as in the extraction of water for irrigation, and is also known for the environmental benefits it provides. This is why the feasibility of implementing this system was analysed to determine if it is a good option as an investment in the agricultural ranch and also the technological importance that this system represents by substituting the use of fossil fuels and contributing to environmental improvement by reducing CO2 emissions that are generated.

Frame of reference

Photovoltaic energy has been a great scientific contribution in the environmental and technological field, With the passage of time this system became more sophisticated, approximately in 1955 the United States of America implemented a photovoltaic system at the request of the National Aeronautics and Space Administration (NASA) in spacecraft to reduce the use of chemical batteries and nuclear energy, then in the 70's the idea of giving more use to solar panels was given the application was experimented in water extraction by pumps generated by solar energy and thinking of reaching areas where there was no electricity (Mendez, 2009).

With the arrival of the 21st century and more technological, social and environmental innovations and in search of a clean, sustainable and renewable technology, it is increasingly common to find the implementation of photovoltaic systems, organic systems, biomass, wind energy, trying to counteract the damage to our planet by implementing the use of renewable energy in residential, industrial, agricultural, livestock, aquaculture, manufacturing, among others (Garcia, 2007).

According to solar energy technology and market demand, there is a wide variety of solar panels, such as silicon panels, which are the most commonly used, these are guaranteed by companies with an average yield of 80% in their first 25 years of useful life, as well as monocrystalline panels, which generate an efficiency of between 15% and 21%, including polycrystalline panels, as they are cheaper than monocrystalline panels and their efficiency is around 14% (Rivas, 2017). Up to 2015, according to data from the National Inventory of Greenhouse Gas and Compound Emissions, 309,553 GWh of electricity was generated, 79.7 % of which was generated in conventional power plants and 20.

According to information from the database of the National Institute of Ecology and Climate Change (INECC), electricity generation emits 19% of total greenhouse gas emissions in Mexico, with an equivalent of 127 billion tonnes of carbon dioxide (CO₂) annually (SENER, 2016) Currently the energy tariff in Mexico dictated by the Federal Electricity Commission (CFE) used in the service of pumping water for agricultural irrigation in low or medium voltage is the 9M, as shown in Table 1, this rate is variable according to the required use of irrigation for each need, is determined monthly and for the month of November 2017 would apply the rate mentioned below:

Energy tariff 9M of Comisión Federal de Electricidad. November 2017	
\$10.146	First 5,000 kilowatt-hours.
\$11.87	Next 10,000 kilowatt-hours.
\$12.471	Next 20,000 kilowatt-hours.
\$13.606	For each additional kilowatt-hour over and above the above

Table 1 Comisión Federal de Electricidad's 9M energy tariff November 2017

Source: Federal Electricity Commission, November 2017

The regulation issued by the Federal Electricity Commission for the use of photovoltaic system in our country has certain restrictions for the installation of solar panels, you have to develop a contract for interconnection to the electricity grid (Annex 1) and in this it is mentioned that the production of energy emitted by solar panels is determined on a monthly basis, and the amount of Kw generated by the photovoltaic system has an annual cut-off date in the month of December of each year, in addition to the installation of a bidirectional meter, which is responsible for measuring the energy emission of the panels (Barrera, 2017).

Conceptual framework

The generation of renewable energy is considered as coming from various natural sources, which are produced continuously by water as hydropower, wind generates wind energy and by the sun that forms solar energy and biomass (Villas, 1999), the latter being known as solar energy, which reaches the earth in the form of electromagnetic radiation (Sarmiento, 2007), these radiations are captured by cells that are included in a photovoltaic system that can be defined as the direct transformation of solar energy into electricity (Mendez Muñiz & Cuervo, 2002).

This technology is possible through solar panels, devices capable of capturing solar radiation for its use, and with this we seek to reduce the use of fossil fuels produced by chemical reactions and form the gas, coal and oil (Mendez Muñiz & Cuervo, 2002), and thus achieve sustainable development by meeting current needs, without putting at risk that future generations can achieve the same way to meet their needs (De Juana, 2008).

Methodology

This case study was carried out on the Santa Edwiges ranch located on the Delicias-Rosales Highway Km 2.0 in the municipality of Delicias Chihuahua, the location of the municipality is shown in figure 2, it is located in the central-southern region of the state of Chihuahua, with a territorial area of 534.93 km² bordering the municipalities of Meoqui and Rosales to the north, and the municipality of Saucillo to the south, occupying a territorial extension of the state of Chihuahua of 534.93 square kilometres.



Figure 2 Geographical Location of the Municipality of Delicias, Chihuahua, Mexico

Source: National Institute for Federalism and Municipal Development

In order to know the energy consumption costs, the receipts of the Federal Electricity Commission were analysed for a trial period of 12 months, as well as the depth of the agricultural well, which is 100 metres, and the water extraction used for irrigation of the property is 80 litres per second, based on this information, the feasibility cost of the project was analysed.

The data collection techniques were generated through an analysis of the monthly bills issued by the Federal Electricity Commission to determine the energy cost of the Santa Edwiges ranch, and based on the results of consumption and the data on the depth and discharge of water from the agricultural well, the corresponding quotations were determined for the cost of establishing the photovoltaic system, as well as the information on the discharge of water for irrigation of the crops grown on the ranch.

The analysis of the financial indicators was based on the methodology of the Capital Budget Evaluation Procedure (BRIGHAM & BESLEY, 2001) and the costs of implementing the system were determined according to the financial indicators NPV (Net Present Value), IRR (Internal Rate of Return, Benefit/Cost Ratio), this information determined the results based on economic feasibility.

To determine the environmental impact of the carbon dioxide emissions emitted per kWh, it was based on: "Methodological Tool: Tool for calculating the emission factor of an electricity system based on seven steps" (UN, 2015):

1. Identify relevant electricity systems.
2. Choose whether to include "off-grid" power plants in the project's electricity system (optional).
3. Select a method to determine the operating margin (OM).
4. Calculate the operating margin emission factor according to the selected method.
5. Identify the group of power units to be included in the construction margin (BM).
6. Calculate the construction margin emission factor.
7. Calculate the combined margin emission factor (CM).

Approach

The research was carried out in a quantitative way determined by the Kwh consumption of the agricultural ranch Santa Edwiges in a period from 2014 to 2017, and in the same way the use of the photovoltaic system and the potential of electricity generation with this system and jointly the environmental exploitation that renewable energy implies were analysed.

Type of research

It was determined in a descriptive research based on the management and use of the photovoltaic system, highlighting its qualities, efficiency for environmental sustainability as well as the economic constraints to achieve the implementation of the system for pumping in the Santa Edwiges ranch.

Design

The case study was carried out in a non-experimental manner since the handling of the information did not have control over the variables to be evaluated. It is also defined as a simple transactional research based on the research and applications that have been done before on this system as well as the places where it has been implemented and the results it has had in an economic and environmental approach.

Variables and indicators

The study variables assessed were

- a. Cost of establishment
- b. Operating cost
- c. Maintenance cost

- d. Amount of energy produced
- e. Initial investment
- f. Cash flows

Financial Indicators

- NPV (Net Present Value)
- IRR (Internal Rate of Return)
- DRP (Discounted Payback Period)
- RB/C (Benefit-Cost Ratio)

Determining as dependent variable the cost of setting up the photovoltaic system. This research work was carried out in the Santa Edwiges agricultural ranch, the property is located in the municipality of Delicias, Chihuahua, and was conducted between the months of January 2016 to November 2017.

Data processing

The Excel program Office 2010 was used as a fundamental support tool for the elaboration and analysis of the results obtained on this project, referring to the financial indicators, the costs of the traditional system and likewise the costs with the implementation of the photovoltaic system, also analysed the monthly electricity consumption in a period of three years from 2014 to 2017 with the conventional way through the Federal Electricity Commission and the analysis if the photovoltaic system is implemented, together the environmental impact of the photovoltaic system was evaluated and the emissions that would be saved with this technology.

Results

The results obtained from this research are mentioned below:

1. Analysis of the costs incurred in the management of this system.

According to the measurement of electrical energy consumption, a result was obtained for the use of 101 solar panels of 260 Kw each, with an inverter of 10,000 w and also 101 structures to support the panels, all this including the installation, interruption boxes, connector boxes and the start-up of the system, this technology would generate a capital investment of \$636.054.32.

By implementing the system a generation of 51, 984 Kwh per year would be achieved and with this information it would be possible to cover the demand that currently has the agricultural ranch Santa Edwiges from the planting of 40 hectares of alfalfa, walnut, corn and chili, and would occupy an area of 307m² for the installation of solar panels. The maintenance costs of the photovoltaic system are practically null, since this technology, due to its structure, does not require maintenance, since when it rains, the system practically cleans itself and its content is resistant to inclement weather.

Likewise, the monitoring of the inverter is guaranteed for 10 years by the company, and it also has a 25-year guarantee of 80% of production in the solar panels. According to the measurement of electrical energy consumption, the result obtained was the use of 101 solar panels of 260 kW each, with an inverter of 10,000 w and also 101 structures to support the panels, all this including the installation, interruption boxes, connector box and the start-up of the system, this technology would generate a capital investment of \$636.054.32, by implementing the system a generation of 51, 984 Kwh per year would be achieved and with this information it would be possible to cover the demand that currently has the agricultural ranch Santa Edwiges from the planting of 40 hectares of alfalfa crops, walnut, corn and chili, and would occupy an area of 307m² for the installation of solar panels.

The maintenance costs of the photovoltaic system are practically null, since this technology, due to its structure, does not require maintenance, since at the time of rain, this system is practically self-cleaning and its content is resistant to inclement weather. Likewise, the monitoring of the inverter is guaranteed for 10 years by the company, and it also has a 25-year guarantee of 80% production in the solar panels.

2. Calculation of the Financial Indicators

Based on the results obtained in the Excel 2010 programme, the following information was obtained as shown in table 2, evaluating the system over 25 years, determining three variables such as the implementation of solar panels with financing, with own acquisition and without the solar panels, this is how Rancho Santa Edwiges is at the moment:

Concept	VAN	TIR	Relation B/C	PRD
Financial indicators with the implementation of solar panels and financing.	\$872,481.33	77.59%	1.81	1.44
Financial indicators with panels and own financing.	\$1,099,133.26	101%	1.52	1
Financial indicators without panels.	\$2,200,818.78	0	1.88	1

Table 2 Project indicators
Own Source

In the previous results it can be identified that the option of investing in the panels is viable according to the activity reflected in the income and expenditure of the Ranch, as it shows an IRR of 77.9% with respect to a TREMA of 38.9%, a NPV of 872,481 compared to an investment of approx. 600,000 which means that the project is profitable in 25 years, even the calculations were made for five years and showed the feasibility of the project, however the investment period is very long compared to the return that is received. In addition, the analysis was carried out with own financing, obtaining also satisfactory results in which, due to the fact that a financial institution will not be used, the profitability of the project is increased, with an IRR of 101% and an NPV of more than one million pesos.

Determination of the environmental impact of the photovoltaic system as a source of alternative energy

The Rancho agrícola Santa Edwiges in the period of analysis from September 2015 to September 2016 generated an annual consumption of 52500 Kwh, which means that multiplied by 0.385 Kg of CO₂ Eq/ Kwh would stop emitting 20,212.5 Kg of CO₂ eq /Kwh, this if the photovoltaic pumping system is implemented. This information would help to mitigate the environmental impact caused by the damage to the ozone layer and compared to the emissions generated by the consumption of 1,811 litres of gasoline in a car, which would be on the same scale as the spread of CO₂ emitted into the atmosphere.

However, it has been proven that economically it is not advisable to implement this system for this particular Ranch, since the greatest benefit would be in the reduction of the environmental impact and not in the specific interests of the Ranch, which refer to the reduction of costs in the consumption of electricity. The best option identified was not to make the investment because although strong emissions of electricity are generated in periods of low consumption, these cannot be accumulated for more time than the cycle established by the CFE, so that although enough energy is generated so that over time the present project is feasible, the economic benefit is not so representative for the agribusiness.

The analysis reflected an NPV of more than 2.2 million pesos and a benefit-cost ratio of 1.88, which is the highest of the options evaluated. According to the analysis of the financial indicators it was determined that the best option is that the ranch should remain as it is at present, that is to continue its energy consumption in the usual way using the CFE company for the supply of electricity as the cost currently generated from the energy tariff is viable and easy to pay on the contrary as with the placement of solar panels these have a history of annual generation, This means that the energy generated in a period up to the month of December of each year is returned to the CFE and this interferes with the feasibility of implementing the photovoltaic system.

Conclusions

According to the identification of the costs to implement the photovoltaic system would be carried out according to the costs for electricity will require 101 solar panels and the same number of structures for the placement of the panels, similarly it requires an inverter with a capacity of 10000 Watts, ranging in a cost of about \$636 thousand pesos. The implementation of the solar panels will be guaranteed by the manufacturer and the installation company for 25 years for the production of the solar panels and 10 years for the inverter required, as well as the monitoring of the same. In addition, according to the ISR law, there is a 100% deduction for the installation of renewable energy generation equipment.

According to the results of the financial indicators, it was determined that it is better for the Santa Edwiges ranch to continue working as usual with the use of electricity issued by the CFE, since with the installation of the solar panels the energy produced is cut off in the month of December of each year, This means that in the periods when the energy generated by the photovoltaic system is most needed, which are the months at the beginning of the year, there is no accumulated energy and this information reduces the viability of the system due to the restrictions issued by the Federal Electricity Commission, the benefit-cost ratio suggests that for every peso invested there is a profit of \$0.88, this is the most feasible result of the evaluation. In terms of environmental impact, it is extremely important to implement renewable energy systems, given that the planet is suffering more and more damage every day and this technology manages to mitigate the CO₂ emissions generated by electricity that go directly into the atmosphere, and today renewable sources seek to be viable because of the green energy they produce.

With the generation of electricity by solar panels, it would be possible to stop emitting about 20 thousand kg of CO₂ eq /Kwh in about a year, these data demonstrate the environmental viability with which the use of photovoltaic system is impacting in a sustainable way and thanks to technological advances every day there are more improvements in quality, flexibility and price of solar panels.


Recommendations

It is recommended to the producer to continue working in the same way since the implementation of the photovoltaic system and according to the modifications that the company CFE has had when making an interconnection contract, certain restrictions have been imposed such as the generation of electrical energy that has a duration of one year, that is, that the electrical energy that is generated and not fully used is returned to the CFE and this reduces its feasibility considerably, and also has a period of use until the month of December of each year. In terms of environmental impact, it is important to think of mechanisms that help mitigate the ecological damage generated by the use of electricity, among other things.

This means that in addition to thinking of an economic benefit from the use of renewable energies, we have to think about the future and work in a positive environmental way, to somehow reduce CO₂ emissions in the atmosphere.

Annexes

Annex 1. Photovoltaic system quotation



ENERGYMOL
Leaders in
Renewable Energy

Renewable Energy Services Chihuahua, Chihuahua, Mexico Ave. Francisco Villa #6501 Col. Panamericana Phone: (614)178-4471 (614)211-5271 Office: 2591222 Email: ventas@energymol.com.mx Visit our website: www.energymol.com.mx Address to: Lizeth Portillo Garcia Date: 17/05/2017 Energy Saving System Service Number: 585 010 504 765 Warranty 25 years 80% of production on solar panels Inverter Warranty 10 Years Factory Defect (MONITORING Included)			
Quantity	Unit Price	Total	Kw/Day
101	4,080.65\$	412,145.45\$	Panels 260 w Canadian Solar
1	76,305.26\$	76,305.26\$	Investor 10000 w CONERA FORTE
101	640.00\$	64,640.00\$	Structure
1	Supply and installation	82,963.61\$	Fixing of switchgear, wiring, piping, junction boxes, switch boxes, functional testing and commissioning of the system.
Installation			
Total			\$ 636,054.32
This quotation includes VAT			
Warranty 25 years 80% of production on solar panels			

References

Anchondo, A. (2009). Producción agrícola en zonas áridas. Chihuahua, México: dirección de extensión y difusión cultural.

- Barrera, A. (13 de 10 de 2017). Restricciones de uso del sistema fotovoltaico. (L. P. García, Entrevistador)
- Brigham, E. F., & Besley, S. (2001). *Fundamentos de la administración financiera*. México, D.F.: McGraw-Hill.
- De Juana, J. M. (2008). *Energías renovables para el desarrollo*. Madrid España: PARANINFO.
- García, L. M. (2007). Energía, Energía fotovoltaica y las celdas solares de alta eficiencia. *Revista digital unoiversitaria vol.8 num 12*, 13.
- Gobierno del Estado de Chihuahua. (2010). Plan Estatal de Desarrollo 2010-2016. Chihuahua, Chih., México.
- Grupo NAP . (2002). *Energía solar fotovoltaica. colegio oficial de ingenieros en telecomunicación* , 1-3.
- INEGI. (1997). *División territorial del estado de Chihuahua de 1810 a 1995* Aguascalientes: Instituto nacional de estadística, geografía e informática.
- Méndez Muñiz, J. M., & Cuervo , G. R. (2002). *Energía Solar Fotovoltaica*. Madrid España: FC EDITORIAL.
- Méndez, J. M. (2009). *Energía solar fotovoltaica(4a Ed)*. Madrid España: Fund. COFEMETAL.
- ONU. (2015). *Framework Convention on Climate Change*. Naciones Unidas.
- Rivas, P. (2017). Paneles Solares Fotovoltaicos. *Instalaciones y Eficiencia Energética*, 1-10.
- Rodríguez, K. (18 de Abril de 2016). Segundo parque solar mas grande de México. *El financiero*, pág. 30.
- SAGARPA. (13 de Septiembre de 2016). *Eficiencia Energetica en el sector agropecuario*. Obtenido de <https://www.gob.mx/cms/uploads/attachment/file/103037/Agropecuario.pdf>
- Sapiain, e. (2010). Electrificación fotovoltaica en el norte de Chile. *Información Tecnológica*, 6.
- Sarmiento, M. P. (2007). *Energía Solar en Arquitectura y Construcción*. Santiago de Chile: RIL Editores.
- SENER. (2012). México, D.F.: Secretaría de Energía.
- SENER. (2016). México, D.F.: Secretaría de Energía.
- SENER. (2016). *Programa de Desarrollo del Sistema Eléctrico Nacional 2016-2030*. México, D.F.: Secretaría de Energía.
- SIGER. (2014). *Sistema de Información Geográfica para las Energías Renovables en México*. México, D.F.
- UNEF. (2016). *El tiempo de la energía solar fotovoltaica*. Madrid, España: Jomagar.
- Velasco, J. C. (20 de 04 de 2016). (L. Portillo, Entrevistador)
- Velasco, J. C. (16 de 01 de 2017). (L. Portillo, Entrevistador)
- Villas, M. G. (1999). *Energía solar fotovoltaica y cooperación al desarrollo*. Madrid, España: IEPALA , Editorial.

Use of design thinking in the creation of an application for the control of diabetes**Uso de desing thinking en la creación de una aplicación para el control de la diabetes**

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Abstract

This document is the result of the implementation of the Design Thinking and Lean Startup methodology in a software development project, carried out by students at the Technological University of Nezahualcōyotl, in order to promote entrepreneurship. Students were guided through each phase of the methodology, with incremental results. It began by determining a real problem, from a real user, later a solution proposal was made, which was implemented, until reaching a real and feasible product. The product developed is a web application for adolescents between the ages of 12 and 17, with diabetes problems and who have no control over the disease, which can exacerbate it. Within the school period several projects were carried out, but this one was taken as an illustrative case and emphasizing that an idea can be turned into a product or service and that it can be marketable. For which the students also made the Business Plan, which will not be presented due to space issues.

Resumen

El presente documento es el resultado de la implementación de la metodología Design Thinking y Lean Startup en un proyecto de desarrollo de software, realizado por alumnos de la Universidad Tecnológica de Nezahualcōyotl, con el fin de promover el emprendimiento. Se guió a los alumnos en cada fase de la metodología, con resultados incrementales. Se inició por determinar una problemática real, de un usuario real, posteriormente se hizo una propuesta de solución, la cual se implementó, hasta llegar a un producto real y factible. El producto desarrollado es una aplicación para adolescentes de edades entre 12 y 17 años, con problemas de diabetes y que no tienen control con la enfermedad, lo que puede agudizar la misma. Dentro del periodo escolar se realizaron varios proyectos, pero se tomó éste como caso ilustrativo y haciendo hincapié, en que una idea se puede convertir en un producto o servicio y que éste, puede ser comercializable. Para lo cual los alumnos también hicieron el Plan de Negocios, el cual no se presentará por cuestión de espacio.

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Introduction

Entrepreneurship is the result of the research and development of an idea, until it becomes a tangible product with the potential to be a business. One methodology that allows the development of this idea in process is called "Design Thinkin", which is linked in an important way to another called "Lean Startup". Together, these two methodologies allow the implementation of ideas into real products through creation, testing and continuous improvement.

This document shows how students from the Universidad Tecnológica de Nezahualcóyotl, through the Desing Thinking methodology, implemented an idea into a real product, which could be launched to the market.

Each stage of the methodology was followed, starting with the generation of ideas resulting from real problems, followed by a specific analysis of the user, in order to better understand the user's needs and experiences.

After correctly identifying the user, ideas were generated and then the chosen options were prototyped in a software called Balsamiq, in order to determine which would be more functional or which could better serve the user.

Manual testing of the application was done, and the user was given the opportunity to try it out and make observations that were corrected. Automated tests were also carried out with Selenium and Test project software.

In the end only two of the required functionalities were implemented due to time constraints (it was done in 3 weeks) and screenshots of the result are shown. It is worth mentioning that several tools were used for the implementation of each stage of the methodology: problem tree, value proposition and benchmarking, in addition to those mentioned above.

Literature review

Different project management methodologies and frameworks have emerged over the years. The Project Management Institute (PMI) states in its guide for project management, PMBok (2017) that a project "is a temporary effort undertaken to create a unique product, service or outcome".

According to Toruño (2019) a project is "an investment of effort and valuable resource in a temporary undertaking to achieve a unique change that produces benefits". When any entity decides to carry out a project, it must necessarily make an investment, which the BBVA bank (2020), in its portal states that: "is a limited amount of money that is made available to third parties, a company or a set of shares, in order to be increased with the profits generated by that business project".

There are different types of projects, i.e. projects can be carried out in all areas. There are economic, financial, social, technological, infrastructural, educational, health, architectural, artistic and even life projects.

For the specific case that concerns us, reference will be made to innovation projects, technological projects (software development) and entrepreneurship projects.

- According to the Oslo manual in Rodriguez (2006), an innovation project is "the set of scientific, technological, financial and commercial activities, which results in: a new product, a new service, a new process, an organisational change (organisational innovation), a change in the market (market innovation)".
- A technological project according to Doval (2006) is "a sequence of stages that aim at the creation, modification and/or realisation of a product, or the organisation and/or planning of a process or a service".
- According to Formichella in Velez and Ortiz (2016), entrepreneurship is the development of a project that pursues a specific economic, political or social goal, among others, and which has certain characteristics, mainly that it has a quota of uncertainty and innovation.
- Entrepreneurship projects are aimed at creating new innovative products or services to satisfy an existing need in a potential market.

- For the development of projects and their correct management, a methodology is required, which we define according to (Maida and Pacienza, 2015) "It is an integrated set of techniques and methods that allows to address in a homogeneous and open way each of the activities of the life cycle of a development project".
- Methodologies in software development or software projects are used among other things to:
 - Optimise the process and the software product
 - Guide the planning of the project in which it is defined: what to do, how and when it should be done, and who will carry out which activities and in how long?

The methodologies are composed of the following elements:

- Phases, which describe the tasks in each phase.
- Products, also called deliverables, which correspond to the results obtained in each phase.
- Procedures and tools, which are all those support elements necessary to obtain results, e.g. programming languages and databases.
- Evaluation Criteria. Software, like all products, must be evaluated to know if they comply with the required quality, this being understood as the satisfaction of the explicit and implicit needs or requirements of the users. For the evaluation of software quality, there are quality standards such as ISO 9126 or ISO 25000, which help to evaluate software. Not forgetting the testing that must be carried out during and after implementation.

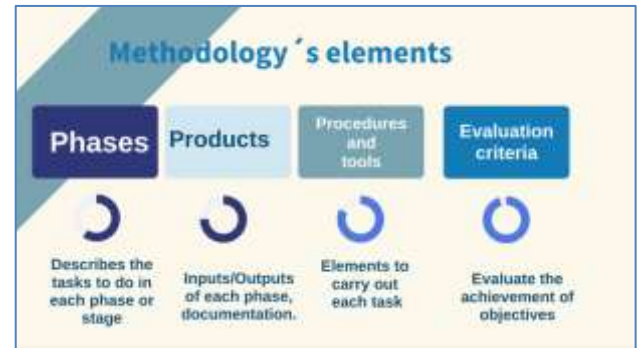


Figure 1 Elements of a Methodology
Source: Own Elaboration

For the purposes of this research, we will classify them as Traditional and Agile methodologies, among which we can mention the most important ones:

1. Classical Methodologies:

These are those that focus their attention on carrying out an exhaustive documentation of the entire project. In this type of methodology it is necessary to establish precise specifications of requirements and data modelling. It is also necessary to follow a work plan, which must be established from the beginning of the project. Within these methodologies we find the Waterfall and Iterative Process methodologies.

Agile methodologies: They involve incremental processes, with frequent deliveries of results, there must be effective communication with the client, they are frameworks that are easy to learn, but sometimes difficult to implement, with the great advantage of allowing changes to the deliverable (product) at the last minute.

Among the agile methodologies (which are rather considered frameworks) are, among others: SCRUM and Kanban.

Below, the way of working in each of the aforementioned methodologies or frameworks is shown graphically. Where:

- R= Requirements
- D= Design
- C= Coding
- T= Testing (pruebas)

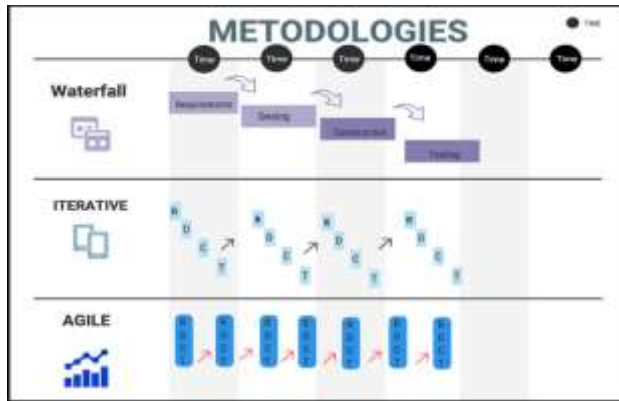


Figure 2 Methodologies

Source: Own Elaboration, based on Garzas, 2018

However, there is another "new" methodology that is currently being implemented in software development, although it was developed in 1970 by Tim Brown, who is recognised as its creator. According to Brown, Design Thinking is the intersection of people's needs, technical feasibility and business viability (Design Thinking Online Community 2017).

A more complete concept of Design Thinking is established by Huertas (2018) and mentions that "it is a flexible methodology that allows the development of projects and business models based on real needs and with a User Experience (UX) orientation". This methodology is based on the following premises, which are the basis for the success of the project under development:

- The user (User Experience) is the main actor.
- It should focus on satisfying real needs
- Its objective is to deliver a product that improves the user's life.
- It should not tell, it should show the product, even if only graphically.
- It should not anticipate the results

Design Thinking consists of the following phases in which tools can be used for better development:

Phase 1

Empathise. It consists of understanding the user's behaviour with respect to a real problem; in other words, a project or business model is proposed based on a real need and, above all, oriented towards improving the user's quality of life. This phase is supported by tools such as: Problem Tree, Mind Map and Observation, among others.

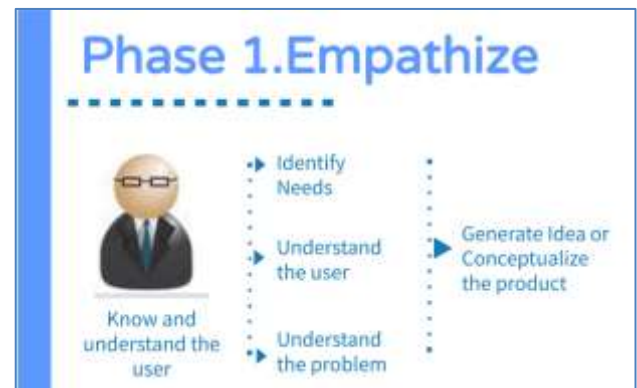


Figure 3 Phase 1. Empathise

Source: Own Elaboration

Phase 2

Define. The result of this phase is to understand the user's need, to be very clear about what they want and need, to determine how the product or service improves their quality of life and to visually demonstrate the user's need. Some tools to better understand this stage are: Infographics and empathy mapping among others.



Figure 4 Phase 2. Define

Source: Own Elaboration

Phase 3

Ideate. In this phase the creative stage begins, after understanding the user. It is in this stage where alternatives are created, possible solutions are imagined and components are devised. The recommended tools in this stage are: the value proposition and Benchmarking.



Figure 5 Phase 3. Devise
Source: Own Elaboration



Figure 7 Phase 5. Testing
Source: Own Elaboration

Phase 4

Prototyping. In this stage the product is modelled and prototypes are generated, which can be in second or third dimension, always focused on the user's needs and aimed at improving the user's quality of life. The prototypes must be testable in order to select the best option. Among the tools recommended for prototyping are: Storyboard and Mockups.

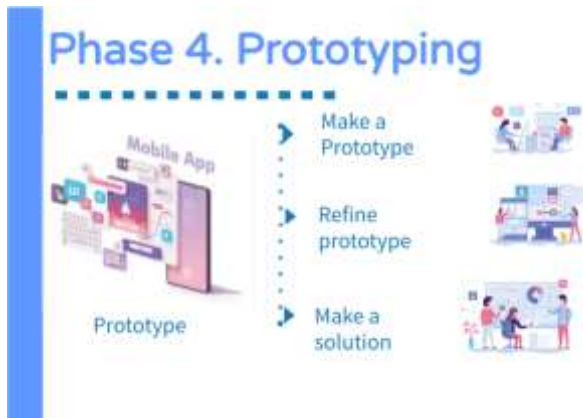


Figure 6 Phase 4. Prototyping
Source: Own Elaboration

Phase 5

Testing. This phase consists of testing the prototypes developed, to determine which are functional and thus choose the best prototypes for implementation in the next stage: Implementation.

This stage allows to analyse the responses of the users with respect to the tested prototypes and which one had more impact or better meets their expectations. Some recommended tools for testing are: TestProject and Selenium.

Phase 6

Implement. After having done all the necessary tests on the prototypes, the one that is most usable for the user and meets their requirements must be chosen. In other words, the product or service must be implemented and made available to the user.

These are the six stages of the Design Thinking methodology, but it is very important to mention that it is totally linked to the Lean Startup methodology (as shown in figure 8). Because it is in this methodology where the development of the project (product or service) is done to later go to the market for its sale.

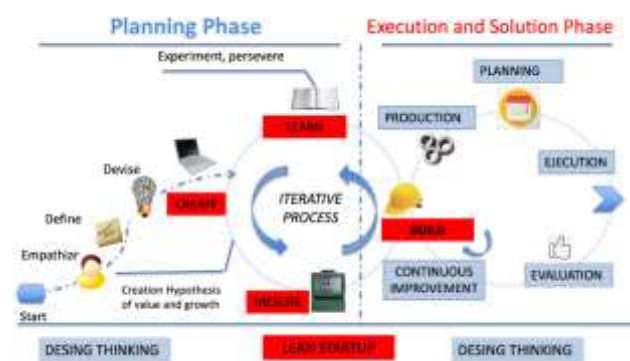


Figure 8 Desing Thinking & Lean Startup
Source: Own elaboration, based on Herrera

For the purposes of this paper, a startup is understood as an emerging company that seeks to undertake a new business within a potential market. According to Hernández (2017) "a startup will be oriented towards the development and/or use of technology, looking for market niches that create ideas".

The Lean Startup methodology is an iterative process based on four phases: Create, Build, Measure and Learn. This is stated by Ries (2012) in his book "The Lean Startup Method", where he mentions that "the fundamental activity of a startup is to turn ideas into products, measure how consumers respond and learn when to pivot or persevere". He also mentions that the success of a startup is based on its ability to understand the feedback it receives from the user.

Ries establishes the so-called "Information Feedback Loop, based on the three elements of the methodology: Create-Measure-Learn, as shown in the figure below.

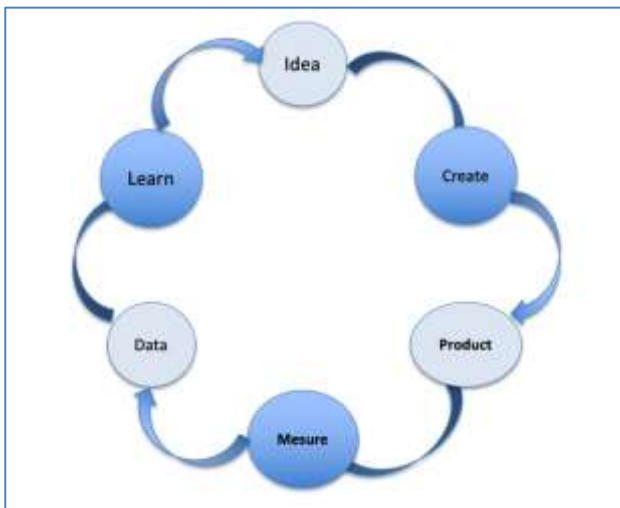


Figure 9 Information Feedback Loop
Source: Own elaboration, taken from Ries (2012)

As can be seen in Figure 8, Lean Startup is an intermediate process of Desing Thinking. In other words, both methodologies complement each other in order for a venture to achieve success in a better way.

Methodology

General objective

To develop a web application for diabetes control in young people from 12 to 17 years of age based on the application of the Dising Thinking methodology.

Specific Objectives

1. Define the problems presented by the probable user and his profile considering demographic and psychographic characteristics.

2. To detect the main competition through benchmarking, making a comparative analysis between companies that offer a similar product.
3. Design the application and its prototype, carrying out the necessary tests to evaluate its functioning.

Type of research

In order to carry out this project, documentary research was used to support the theoretical basis for the development of this project. Exploratory research was also applied to define the user profile and the competition through benchmarking.

Desing Thinking Method

The process of Desing Thinking (empathise, define, ideate, prototype, test, implement) was followed and implemented as detailed below.

Through the aforementioned methodology, the results obtained in each of its phases are shown. Until achieving a product based on a real need, for a real user.

Results and discussion

According to Velez and Ortiz, entrepreneurship projects are "The implementation of an idea into something tangible", that is why in the Unviersidad Tecnológica de Nezahualcóyotl, in the new program of studies of the Software Development Engineering Career, there is the subject "Methodologies for Software Development", in which they are taught the different types of projects and methodologies for their realisation.

The application of the Desing Thinking methodology in software development is detailed below.

Phase 1. Empathise. This consists of understanding the user's behaviour with respect to a real problem. For this phase, the problem tree tool was used, which consists of determining a real problem and identifying the causes and consequences, as shown in the following image.

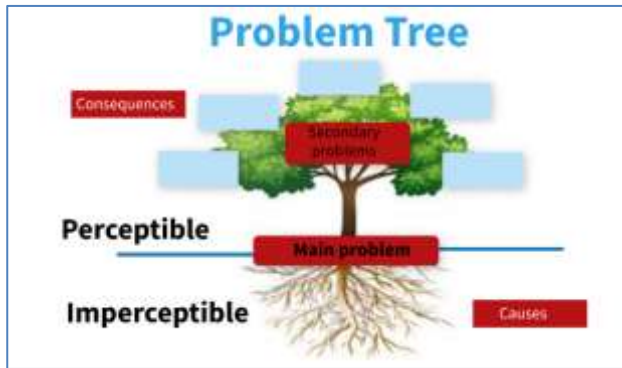


Figure 10 Problem Tree

The students made their tree with the problem: Diabetes. The result of their analysis is shown below.

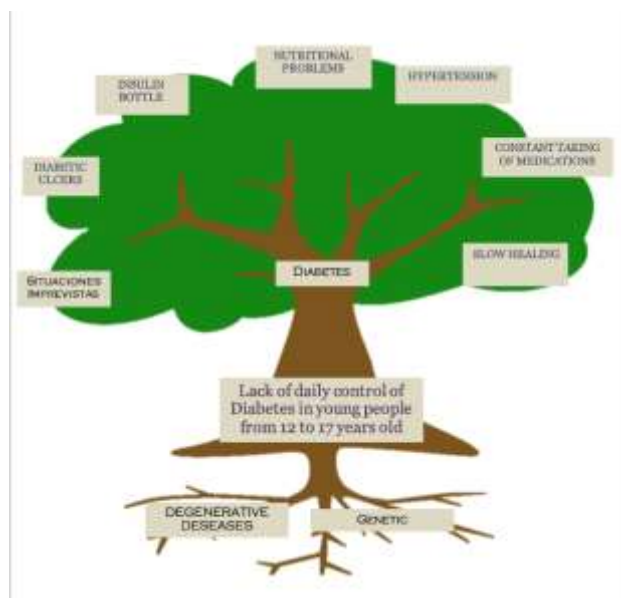


Figure 11 Problem tree: Diabetes
Source: Ayala, 2022

The real problem they established was related to diabetes, taking as the main reference point the control that a patient with this condition, specifically a minor, should have.

Phase 2. Define. In this phase, as mentioned above, it is necessary to establish the user profile. The better the definition, the better the approximation to their needs. The user profile is shown below.

Figure 12 User Profile

Phase 3. Devising. In this phase the students began to devise applications that could solve the problem of the lack of control over medication and routines that an adolescent with diabetes must follow.

Two tools were used in this phase: Value proposition and Benchmarking. Both tools are presented below.

The value proposition is a tool that consists of two parts, the first is aimed at getting to know the client and their real needs or problems.

Its objective is to generate Business Models, profitable products or services that improve people's lives. It starts by defining the problem (in the customer part) and moves on to the proposed solution, in the product/service part, and closes again in the customer section (see image below).

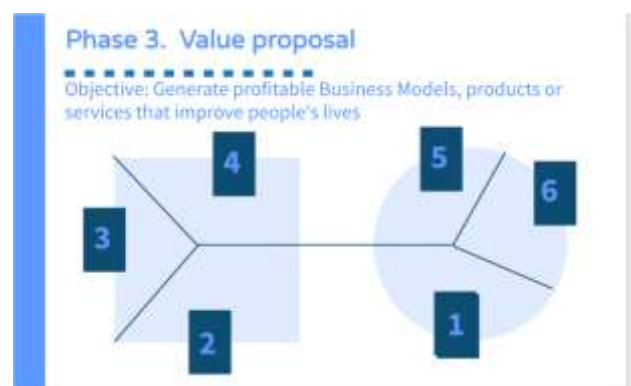


Figure 13 Value Proposition. Elements

The value proposition of the project is presented below



Figure 14 Example of Value Proposition
Source: Ayala (2020)

Another tool used in this phase is Benchmarking (Cárdenas 2006), which consists of the evaluation of products, services and processes between organisations, whereby one of them analyses how another or others perform a specific function in order to equal or improve it. It is a tool used to determine the advantages and disadvantages of competitors and to establish parameters or metrics in the development of similar products, with the aim of improving them. A part of the Benchmarking analysis carried out by the students is shown in the following image:

BENCHMARKING					
EMPRESA	CARACTERÍSTICAS	CALIDAD	PRECIO	VENTAJAS	DESVENTAJAS
MySurg	REGISTRA AUTOMÁTICAMENTE LOS DATOS Y SE PUEDE RECIBIR LA INFORMACIÓN DE LA TERMINA OVARIA, COMO LA CONCORDANCIA DE LA DIETA Y LA PUESTA DE CARBONHIDRATOS. ASÍ MISMO REGISTRA LOS MEDICAMENTOS QUE SE TOMAN, WALCHES DE LA GLUCOSA Y LOS NIVELES DE LA INSULINA.	EL 99% DE LAS PERSONAS QUE HAN UTILIZADO LA SATISFECHEAS CON EL CONTENIDO DE LA MISMA.	\$29.00 MXN	<ul style="list-style-type: none"> TIENE VERSIÓN GRATUITA. SE PUEDE SINCRONIZAR CON EL GLUCÓMETRO. RESPECTO DE VALORES AUTOMÁTICOS. 	<ul style="list-style-type: none"> SE DEBE PAGAR PARA CONTAR CON LAS DEMÁS FUNCIONALIDADES.
DIABETES MANAGEMENT & BLOOD SUGAR TRACKER APP	LA APLICACIÓN RASTREA CASI TODOS LOS ASPECTOS DEL TRATAMIENTO DE LA DIABETES Y PROPORCIONA INFORMES DETALLADOS CON GRÁFICOS Y ESTADÍSTICAS.	EL 99% DE LAS PERSONAS QUE LO HAN DESCARGADO QUEDAN SATISFECHEAS CON EL CONTENIDO DE LA MISMA.	\$99.00 MXN	<ul style="list-style-type: none"> SE PUEDE ENVIAR LOS INFORMES AL MÉDICO POR MEDIO DE CORREO ELECTRÓNICO. TENDENCIAS DE NIVELES DE GLUCOSA Y TIENEN LA IDEA DE LO NORMAL DE LA GLUCOSA. TIENE VERSIÓN GRATUITA. 	<ul style="list-style-type: none"> SE DEBE PAGAR PARA CONTAR CON LAS MÁS FUNCIONALIDADES.
FONDIAETER	UN LIBRO DE REGISTRO DE GLUCOSA EN SANGRE, CÍRCULOS, ACTIVIDADES, MEDICAMENTOS, PRESIÓN ARTERIAL, PISO, ETC. DE SINCRONIZACIÓN DE DATOS AUTOMÁTICAMENTE INSIANTE APLICACIÓN DE TENDENCIAS Y DISPOSITIVOS DE MEDICIONES DE GLUCOSA.	EL 90% DE LAS PERSONAS QUE LO RECOMIENDAN.	\$120.00 MXN	<ul style="list-style-type: none"> COMANDO DE VOZ DE LA ASISTENTE JARVIS ALIKA SMART. COPIA DE UNA VERSIÓN GRATUITA. DATOS MANUALES BENCHMARKING. 	<ul style="list-style-type: none"> PARA ACCEDER A MÁS FUNCIONALIDADES SE DEBE PAGAR.
DIABTREND	CONTROLA LA DIABETES EN MENOS DE 5 MINUTOS CADA DIA.	EL 80% DE LAS PERSONAS QUE LO USAN LO RECOMIENDAN.	\$208.00 MXN	<ul style="list-style-type: none"> FACILITADOR DE REGISTROS. Cuenta con una versión GRATUITA. 	<ul style="list-style-type: none"> PARA OBTENER MÁS FUNCIONES SE DEBE PAGAR Y ES UN POCO ELEVADO SU PRECIO.

Figure 15 Benchmarking

Phase 4. Prototyping. In this stage the product is modelled, for which the students made the Mockups, in a software called Balsamiq. In order not to extend the document, only some screens will be integrated.

It was prototyped for both a web application and a mobile one, to later evaluate and decide which one the user considered more practical or easier to use.

2. Web application

The application is presented below for use on a computer or tablet.



Figure 16 Login



Figure 17 Medication Schedule



Figure 18 Glucose Recording



Figure 21 Registration



Figure 19 Suggested diet



Figure 22 Glucose recording

Mobile application. According to Florido (2013) "It is software that uses a mobile device as a tool for communication, management, sale of services-products aimed at providing the user with the needs that he/she demands automatically and interactively".



Figure 20 Logging in



Figure 22 Medication Schedule



Figure 24 Suggested diet

Phase 5. Testing. This phase consists of testing the application, in order to detect errors. The tests were carried out manually and automatically. The latter was done with Test Project software. Here are some screenshots.

We started in Test Project and we indicated the type of project to be evaluated, as shown in the following image.

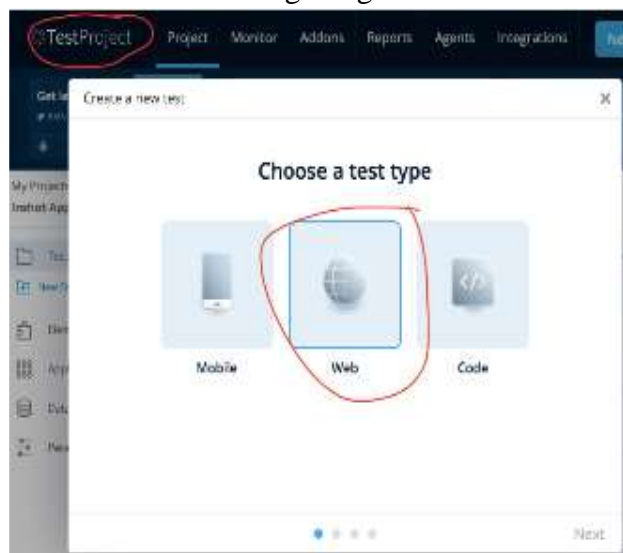


Figure 25 TestProject - web application evaluation

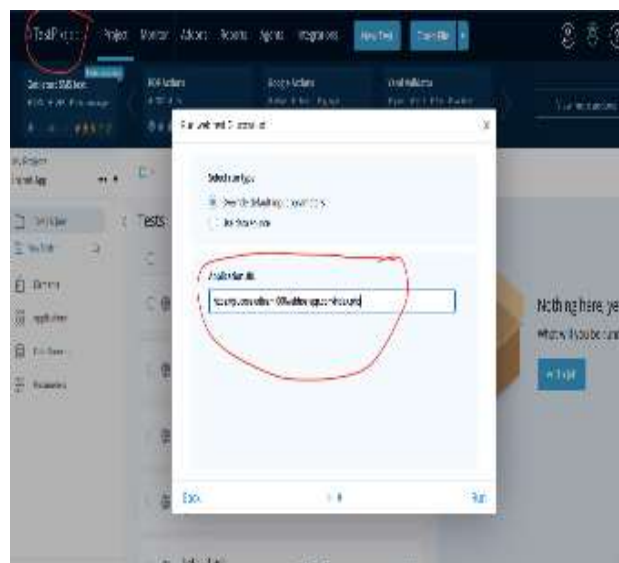


Figure 26 Enter URL

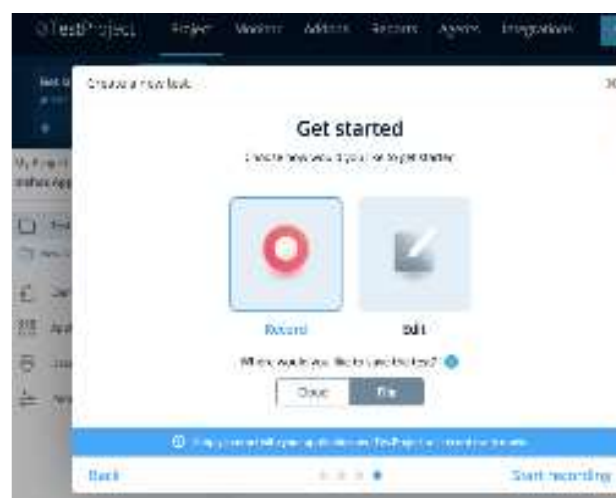


Figure 27 Test recording starts



Figure 28 Application login from test

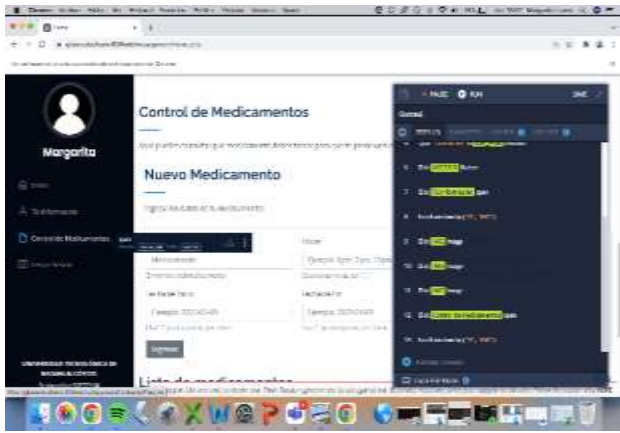


Figure 29 User data. Inside test

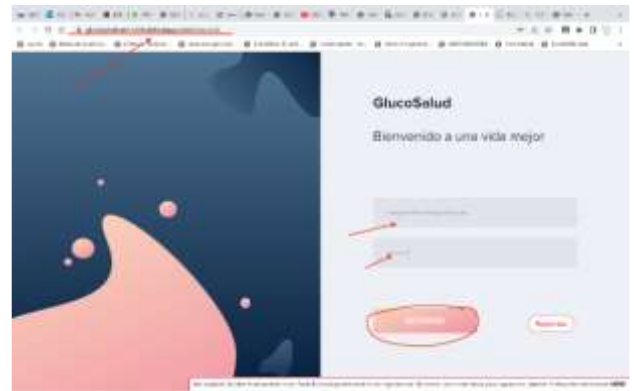


Figure 32 Web application login

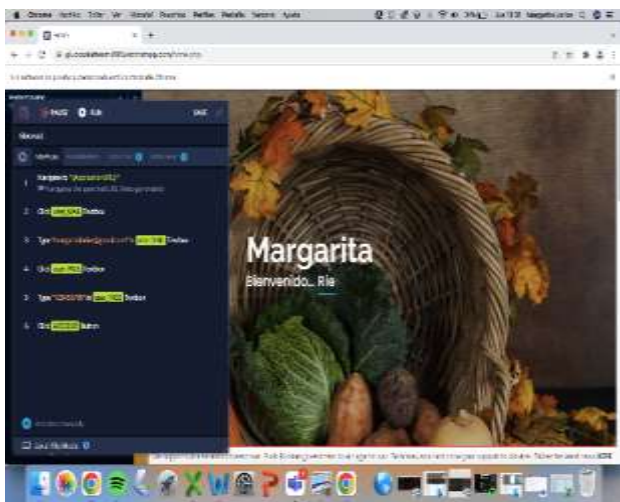


Figure 30 User data. Inside test



Figure 35 Home page



Figure 31 Test Report



Figure 36 Registration of medicines



Figure 37 List of medicines

Phase 6. Implement. This phase consists of uploading the project to a server and executing it from any browser. Some screens of the application's functionality are shown below.

Conclusions

Methodologies are a great support for the development of projects, some are very robust and others are light, but all of them have the same objective: to create functional and marketable products or services.

The methodologies mentioned in this document are not totally new, but they are starting to be implemented in IT areas, which helps students to generate projects in a "faster" way, since they already know the traditional methodologies and rely on them for a better development. The students had the ability to develop projects that can be implemented as a startup and that are feasible to commercialise.

Six similar projects were developed, which cannot all be shown due to space limitations, but others were developed, such as: a mobile application for children with language problems and another to provide physical therapy to young people with limb problems due to some kind of accident.

It is worth mentioning that the users are real, as are the problems. For example, in the case of Diabetes, the user taken to develop the idea was the sister of one of the members of the team; and for physical therapy, the user was the brother of a member of another team who, in recent months, had a motorbike accident. This is an important requirement of the Desing Thinking methodology.

References

- Cárdenas, Cristia. Scielo. (2006). <http://scielo.sld.cu> (accessed abril 21, 2022).
- BBVA Bancomer. BBVA Bancomer. 04 24, 2020. <https://www.bbva.com/es> (accessed 06 26, 2020).
- Desing Thinking Comunidad Online (2017). Desing Thinking. <https://www.designthinking.services/2017/07/que-es-el-design-thinking-historia-fases-del-design-thinking-proceso/> (accessed abril 20, 2022).
- Doval, L.(2006). El proyecto tecnológico. Dirección General de Escuelas, Argentina: Dirección General de Escuelas,.
- Hernández, F. (2017) et al. "Startup, tendencia que está tomando mucha importancia en la actualidad." BOLETÍN CIENTÍFICO DE LA ESCUELA SUPERIOR DE ATOTONILCO DE TULA (BOLETÍN CIENTÍFICO DE LA ESCUELA SUPERIOR DE ATOTONILCO DE TULA) 4, no. 5.Huertas, J. (2018). ¿Qué es Desing Thinking? marzo 18, 2018. <https://www.youtube.com/watch?v=4KWj19qdeA> (accessed febreo 25, 2022).
- Maida, E. and Pacienza J. (2015), METODOLOGÍAS DE DESARROLLO DE SOFTWARE. Tesis, FACULTAD DE QUÍMICA E INGENIERIA "FRAY ROGELIO BACON, Universidad Católica de Argentina, Buenos Aires: UCA, 116.
- Project Management Institute. Guía de los fundamentos para la dirección de Proyectos. Sexta. Pensilvania: Project Management Institute, Inc., 2017.
- Ries, E. (2012). El Método Lean Startup. Translated by Javier San Julian. USA: DEUSTO,
- Rodríguez, J. (2006), "La innovación tecnológica: más que un proyecto exitoso. A propósito del premio nacional de la innovación." Redalyc.. Disponible en: <https://www.redalyc.org/articulo.oa?id=64326211> (accessed 04 19, 2022).
- Turuño, I. (2019). El Manifiesto del Líder de Proyectos. USA: MBA,
- Velez, J., and Ortiz S., (2016), "Emprendimiento e innovación: Una aproximación teórica ." El dominio de las ciencias 2, no. 4.

Male chauvinist stigmatization among homosexual peers in Sucre Bolivia**La estigmatización machista entre pares homosexuales en Sucre Bolivia**

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Abstract

This article aims to analyze the characteristics of gay macho approach through the stigma that makes their peers, the criteria considered by the political and social implications that can raise awareness of sexist respecting gays behavior of other sexual orientations lgby (lesbian, gay, bisexual and trans). Masculinity in sectarian groups is the result of a conservation and fundamentalist patriarchal society in good standing to prosecute a patriarchy rooted City constitutional capital of Bolivia Sucre. The stigmatization of the gay personality when it acts against the heteronormatidad being effete, effeminate or too obvious; these behavioral attitudes behavior is condemned as little accepted by others and even homosexuals themselves categorized as not visible, discrete or closet.

Machismo GLBT community, Homosexuality, Stigma, Heteronormatidad**Resumen**

El presente artículo tiene como objetivo analizar las características del enfoque machista gay a través de la estigmatización que hace de sus pares, los criterios considerados por las implicaciones políticas y sociales que pueden sensibilizar a los sexistas respetando el comportamiento de los gays de otras orientaciones sexuales lgby (lesbianas, gays, bisexuales y trans). La masculinidad en los grupos sectarios es el resultado de una conservación y la sociedad patriarcal fundamentalista en buen estado para perseguir un patriarcado arraigado Ciudad capital constitucional de Bolivia Sucre. La estigmatización de la personalidad gay cuando actúa en contra de la heteronormatidad siendo afeado, afeminado o demasiado obvio; estas actitudes de comportamiento son condenadas como poco aceptadas por los demás e incluso los mismos homosexuales catalogados como poco visibles, discretos o de closet.

Machismo Comunidad GLBT, Homosexualidad, Estigma, Heteronormatidad

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Introduction

The present work is divided into 6 sections: the first section will refer to the background and the theoretical framework where we will look at categories of sexual diversity, the criteria of machismo, homosexuality and masculinity; in the second section we will look at the methodology, showing how the study was carried out, including the design, the participants, the procedure and the instruments used for the research; in the third section we will look at the results; in the fourth section we will discuss the research topic; in the fifth section we will formulate the conclusions; and finally in the sixth section we will look at the references and the entire theoretical foundation.

Background

Machismo is a way of thinking about "how a man should be" (the role of the male), about what one should do in order not to lose one's masculine "particular characteristics" and not to run the risk of being considered and esteemed as a woman or "effeminate or mannered behaviour". Among gays, this behaviour manifests itself in various forms.

This thinking includes a lot of dogmas, attitudes and practices that produce the stereotype or rigid pattern of a man with characteristics of being strong, intelligent, brave, trying to generate economic dependence, resistant to pain, superiority complex, possessive, controlling, dominating, with a great potential for sexual performance to which he must give free rein, without linking it to feelings of love, and who should never show the qualities that are considered to belong to women, such as gentleness, tenderness, empathy, romanticism, confidence, physical weakness, personal care, dress, emotional insecurity, and willingness to have sex only when the man dispossesses her out of love.

Obviously, this strict stereotype cannot be totally fulfilled by any real man or woman. However, from childhood we are taught to think that this is how we should be and if we don't live up to it, we feel guilty and ashamed.

In some societies the male stereotype has included love between men as one of its qualities, as in the case of the "Theban lovers' squad", an invincible army because the soldier who went into battle not only defended his homeland and his life, but also his lover.

But since the (Telleria, 2012,)18th century in Western culture, the image of the homosexual was created as effeminate and homosexuality was related to a lack of virility. Since then, it is required that a man, to be considered valuable and macho, be heterosexual and despise homosexuals, seen as effeminate. (2012). Self-diagnosis and recognition of heteronormal macho violence against homosexuals who are effeminate.

Understanding heteronormal macho violence in the LGBT community. (Gay, Lesbian, Bisexual and Transgender) community. Recognise where it is present, what the causes are, who the perpetrators are, why, etc.

Sexual diversity**Sexual orientation**

Sexual orientation is an ongoing attraction to another person on an emotional, romantic, sexual or affective level. It is easy to differentiate from other components of sexuality, including biological sex, gender identification (the psychological feeling of being male or female) and the social role of gender (such as adherence to certain cultural norms related to male and female behaviour). Research over several decades has shown that sexual orientation ranges from exclusive attraction to another sex to exclusive attraction to the same sex. However, there are usually three categories: heterosexual, homosexual and bisexual.

Gender identity

Gender identity refers to one's internal and individual experience of gender as one deeply feels it, which may or may not correspond to the sex assigned at birth, including one's personal experience of the body (which may involve modification of bodily appearance or function through medical, surgical or other means, as long as it is freely chosen) and other expressions of gender, including dress, speech and mannerisms.

(Yogyakarta Principles. Principles on the Application of International Human Rights Law in relation to Sexual Orientation and Gender Identity, Yogyakarta, Indonesia, March 2007).

Sexual and gender identity

Set of affective, emotional, erotic and sexual characteristics for a person of the same or opposite sex such as Gay, Lesbian, Straight, Bisexual, Transvestite, Transsexual, Transgender, and Transvestite, referred to as the LGBT community.

Machismo and Homosexuality Masculinity Machismo

Machismo is a cultural construct based on the history of the evolution of gender role socialisation, essentially a particular way of conceiving the male role based on the myth of male superiority. It encompasses the set of attitudes, behaviours, social practices and beliefs that justify and promote the maintenance of behaviours traditionally perceived as heterosexually masculine and also discriminatory against women and men.

(Alvarado, 2013) Masculinity as a configuration of practices, social representations and subjective elements constituted in a socio-historical moment will be a determining factor in highlighting the character and specificity of the set of norms, values, principles, customs and expectations established by a given culture, as it is this that defines the elements, especially symbolic ones, that allow individuals to identify with a gender.

If men have to go through tests to prove masculinity, it is precisely because masculinity is not determined by nature; for this reason, societies establish guidelines, rituals, tests, systems of rewards and punishments that encourage aggressive and active behaviour, inhibiting passive behaviour.

When social actors were asked whether men and women are the same, a consensus emerged as to what differentiates one from the other: men are prevented from expressing tenderness, affection, sadness or pain, and competitiveness, anger, aggressiveness, audacity and also pleasure are stimulated as signs of ideal masculinity; in women, the process traditionally occurs in reverse.

A masculine conflict centres on the question of the equality of the feminine and the masculine; in line with Fuller (1997), the boy quickly learns about his gender, and thereby realises that he will become a man, the adolescent male constructs his masculinity by drawing strict boundaries between two worlds governed by opposing codes: the street and the house. The house houses a scene of rules and conditions to be followed, of rigid moral codes, permissions, schedules and restrictions.

For most men, and especially for those from popular sectors, the street represents a key space in the formation of subjectivity; it is the possibility of distancing oneself from the family environment and constitutes the space of transgression par excellence. As opposed to the home, the street sets out its own codes of conduct that order the construction of habits on the part of the adolescent male around a basic premise: a real man must earn the right to be sovereign of himself.

Male homosexuality

(Lancaster, 2012) "Stereotypes can be positive, negative or ambiguous and prejudice is always negative, however, of the three, discrimination is the most negative" For Freud (1905) when the sexual object is not a person of the opposite sex, but another of the same sex, we are in the presence of homosexuals or inverts, and the fact itself is called inversion. According to this view, the homosexual does not escape the oedipal dialectic. Colina (2010) affirms that with the so-called inverse discourse, species and subspecies of homosexuality and greater social control over them appear, disciplining and marginalising them; paradoxically, this discourse is what allows homosexuals to speak on their own behalf.

(Butler 1990 - 2001) indicates that the most powerful mechanism for the cultural maintenance of compulsory heterosexuality is the deterministic chain: sex/gender/desire. Sex determines gender; and sex and gender determine the appropriate bodies/objects of desire.

This essentialist, binary axiom is the basis of Western gender identity models (male and female). Butler extracts sexuality and sexual identities from certain fields of knowledge (biology, psychology, psychiatry, medicine) and brings them into the social and political realm. For Córdoba (2003), the interest of Butler's theory lies in not falling into subjectivist voluntarism or biologicist essentialism.

Butler is one of the representatives of the so-called queer theory, which emerged in the 1990s. For queers, personal identity is put at risk by joining homosexual identity politics groups. While GLBT activists think of difference as exclusion, queers seek a new epistemology of difference, where the other is not subordinated to the same (Estrada et al, 2007).

Queer theory proposes, in a way, a stance resistant to identity politics and gender categorisation. Vélez (2008) identifies queer people as differentialists as opposed to assimilationists or GLBT, who always act according to norms and society, demanding - for example - same-sex marriage.

Freud's (1905) view of homosexuality is important to study because it corresponds to a context in which psychology was equivalent to psychoanalysis. The author focuses on the sexual object, inversion and the aforementioned Oedipus complex.

Through the different manuals of Diagnostic and Statistical Manuals of Psychiatric Disorders of The evolution of the concept of homosexuality in psychiatry from a sociopathic personality disorder to a sexual deviation and its subsequent removal from the list of mental disorders in 1973 can be seen through the various manuals of the American Psychiatric Association's Psychiatric Diagnoses and Statistics of Psychiatric Disorders. The World Health Organisation (WHO) also removed it from the list of diseases on 17 May 1990. Today is the international day against homophobia. Psychologists affirm that homosexual orientation is not a mental or emotional disorder, and therefore there should be no discrimination based on the sexual orientation of individuals. All professional associations and colleges have included this principle in their ethical and deontological codes.

Hegemonic masculinity and its relation to homophobia

(Revista Puertorriqueña de Psicología) Hegemonic masculinity is synonymous with other concepts such as machismo or patriarchy. It refers to a way of being a man that allows him to feel above women and what is understood as feminine. In particular, it promotes the socio-cultural construction of being a man, extolling aspects linked to achievement orientation, work, physical strength, purchasing power, and demonstrating leadership and competence, factors that are not negative in themselves, but which, in the logic of male hegemony, translate into elements used in the use and abuse of power. On the other hand, the feminine is defined in subordination to the masculine; these are characteristics oriented towards expression, affection, submission and abnegation (Castañeda Gutman, 2007; Díaz-Loving, Rocha Sánchez, & Rivera Aragón, 2007; Kaufman, 1989; Lamas, 1997; Núñez Noriega, 2005; Kaufman, 1989; Lamas, 1997; Núñez Noriega, 2005).

These characteristics rooted in the masculine and feminine are not universal, although they may coincide across different contexts. Culture is a fundamental element in delimiting both the content and the value of these attributes. In this sense, in Mexican culture, a stereotypical and differential vision is fostered between men and women and, therefore, between genders (Díaz-Guerrero, 2003a; Díaz-Loving et al., 2007). In fact, as Díaz-Guerrero (2003a, 2003b) suggests, through his study on the configuration of the Mexican family, he detects that there are two fundamental premises that persist and permeate Mexicans: the supremacy of the father over the mother and the self-sacrifice of the mother.

Based on these premises, a series of arguments and norms are configured that precisely reveal a homophobic vision that translates into considering that homosexuality on the part of the children is one of the great family dishonours.

Núñez Noriega (2005) points out that in Western culture there must be a concordance between three identities: sexual (male or female), gender (masculine or feminine) and erotic-sexual (men who prefer to relate erotically and affectively with women and vice versa specifically), as this is the social mandate.

In other words, a man must be masculine and heterosexual, while a woman must be feminine and heterosexual. This is called a binary view of sex and gender, which encourages a conception where sex is defined by genitalia that heralds a reproductive purpose. Therefore, sexuality must take place between a man and a woman. In this sense, a reproductive (and therefore sexual) complementarity between the sexes is understood; that is to say, that the man is the complement of the woman and vice versa, although this has little to do with the path that sexual desire takes in each person.

This not only makes sexual and affective relationships between people of the same sex invisible, but also gives rise to violence and aggression against them, sustained by this binary and normative vision.

Socialisation based on the premises and norms described above allows for the development of a way of understanding the exercise of homophobia and even favours the use of degrading words as a synonym for homosexuality. Lozano Verduzco

(Revista Puertorriqueña de Psicología) (2009) found that high school boys in Mexico City often refer to gay men as maricas and jotos; words that refer to the similarity between homosexuals and women and the link to their low social worth. Although the development of masculinity studies and some homophobia studies make clear the relationship between both constructs, it is considered that their empirical relationship has not been studied. For this reason, the aim was to find out the relationship between the expression of homophobia and masculine and feminine traits, hoping to find significant correlations between the two. Having this information makes it possible to open channels of discussion about the social, cultural, institutional and individual development of homophobia, as well as to envisage ways of working to reduce it in civil society.

Currently, there are many social programmes that seek to eradicate gender violence, however, not all of them include work on homophobia. [Sánchez, T.E.R.2011].

Stigmatisation and discrimination

Stigmatisation

First of all, we must understand that in describing our behaviour, we refer to individual characteristics and personal habits. Other times, we refer to belonging to a group and the perception of this group that influences our perception of others.

In order to understand more clearly the differences, similarities and characteristics of the concepts that encompass stigmatisation: stereotype, prejudice, discrimination, it is necessary to include them within the definition of a group.

Recall that a group is made up of two or more individuals who share a social identification of their person, i.e. who perceive themselves as members of the same social category. Intergroup behaviour encompasses the parts of our lives that are affected by membership in various social categories (age, gender, race/ethnicity, political affiliation, sexual orientation, nationality, language use, etc.).

Discrimination

Discrimination is the differential treatment of people on the basis of their membership of a particular social category. This treatment becomes negative when it nullifies or impairs the recognition, enjoyment or exercise of people's rights. Discrimination is a behavioural expression (both verbal and non-verbal of prejudiced and stereotypical attitudes); stereotyping is a generation of expectations or assumptions about an individual based on his or her membership of a group or category, which is built into our lives even before we are born, influencing the way people see us and interact with us. It should be noted that stereotypes are characteristics, but also expectations.

The stereotypes we have socially established obey the knowledge and beliefs we have in relation to certain people or groups; prejudice is the negative affection that is associated with individuals and is based on their belonging to a group or category. It has an emotional or affective component of our feelings in relation to other people or groups.

According to the Dictionary of the Royal Spanish Academy (n/d) a stereotype is an "image or idea commonly accepted by a group or society with immutable character", from which it can be said that it is a representation, category, simplified generalisation, perception, construction, concepts, beliefs, prejudice, images, attitudes, formation of impressions, linguistic responses, habits, social identity and formation of expectations.

Masculinity and stigmatisation

Heteronormality in society with variables of value education, ethics and fundamentalist normality of heterosexuality do not allow the individual to manifest his or her different sexual orientation.

The prejudice that is given to these people in the academic and educational environment in school, college or university falls more on the bullying by homophobia since the most vulnerable are the gays that in the process of identification and assimilation of how this was born is forced to be the object of discrimination by homophobia and machismo either of their conduct come to affect the gender identity that homosexuals adopt whether these are active or passive in their sexual role; that marginalize and discriminate by the fact that this is a person who makes his sexual orientation visible to society.

Methodology

The methodology of the article has a qualitative approach, being a descriptive research and is based on a socio-critical paradigm; the population studied is the city of Sucre - Bolivia, making an analysis in the GLBT population, collecting certain criteria in activities, attitudes and behaviour of gays.

Results

Field	Cultural research
Area	Psycho-social
Aspect	Gender
Spatial delimitation	City of Sucre
Temporal delimitation	2014
Observation units	Homosexuals

Table 1 Delimitation of the research object

It is in the city of Sucre where the study is being carried out that emphasis is placed on machista behaviour in the GLBT community; Sucre being the constitutional capital of the Plurinational State of Bolivia and the one that is still conservative and finds it difficult to accept people with different sexual orientations.

Independent variable:	Dependent variable:
male chauvinism	stigma
family	discrimination
society	violence

Table 2 Key categories

These variables taken into account are the ones that stand out in the analysis of the GLBT population and the different states of response that are evident in the behaviour of the family and society that give rise to three aspects of:

Learning.- analysis of findings and their implications. Understanding the factors that contribute to machismo towards other homosexuals as it affects them and how.

Action - designing and implementing advocacy actions to eliminate gay machismo.

Parallel process - create spaces for understanding and awareness-raising to discuss the issue of machismo.

Family:	society:	Education:
Custom	Behaviour	Education Values
Tradition	Prejudices	Formalist culture
Religion	Negative paradigms	Conditions Conditions
Family:		Custom Traditionalist

Table 3 Machismo factors

There will be a structural change when the traditional conservative patterns of education in the family and society are broken.

Psychological perspective	Poor self-esteem, fear, confusion, guilt, worry, and shame
Interpersonal relationship	On the one hand, they may have experiences filled with fears, apprehensions and insecure and questioning insecurity about other people's reactions other people's reactions.
Assimilation of society	A vision that is tinged by social prejudice, stigma, homophobia and marginalisation of a reality creating invisibility, homophobia and marginalisation of a reality that creates invisibility for the population.
Attitudes to action permanent	Excessive caution in heteronormal practices such as: speaking slang, being more aggressive and clumsy, avoiding being sentimental, metrosexual, etc.
Driving out of fear	Camouflage their repressed sexual desires and feign sexual attraction to women sexual attraction to women.
Cauterised attitude	Little importance of what the people around them think, say and act, because of how the people around him/her because of the way the subject has formed his/her identity and behaviour of living.

Table 4 Singular and social behavioural factors

These factors are what provoke certain attitudes of others towards the stigmatisation of effeminate homosexuals and the response behaviour of effeminate homosexuals.

Analytical interpretation of homosexual society

When creating your personal account on Facebook, twitter, orkut, slideshare, badoo, myspace, or other social networks, selecting an option of sexual preference and general data of the subject, where many homosexuals with a false profile show themselves to the gay community with a fictitious name and data, they are usually people who still find it difficult to declare their sexual orientation to society and their family.

When this person feels comfortable having thousands of friends on the net who want to be virtual friends, some of them, describing themselves or hiding a deceptive and false low profile, generally look for an affectionate sexual relationship or friendship in others.

The sexual roles of homosexuals are: active, passive and versatile; for a while it was thought that men who fucked with other men had to have a defined role (active = the one who penetrates or passive = the one who is penetrated) because it was thought that in a couple of men, one of them had to play the role of a woman.

Today, many adopt both roles (versatile), being able to prefer one or the other role (penetrate or be penetrated), respecting the right to decide and choose.

When trust is strengthened between two people, the macho homosexual generally asks his virtual friend: what is his preference or role, what is he like, is he manly, is he masculine, is he masculine, is he masculine, is he masculine, is he masculine, is he masculine, is he masculine? If he is manly, if he is discreet (not at all mannerly), what music he listens to, how he dresses, etc.

Given the characteristics that this other person responds to, it is necessary to accept or deny him/her access to go out and share a walk and have a casual relationship or form a couple.

The mere fact of preferring someone with masculine characteristics, being a passive homosexual, increases the possibilities of having more lovers and friends, since the stigmatisation falls more on passive gays, but not always the characteristic of passive homosexuals in being effeminate and wearing tight clothes and colours that highlight their personality, and there are active homosexuals and even heterosexual men who adopt feminine postures and that does not mean that they are no longer virile men in front of another man or are less of a man in front of a woman, speaking of couples made up of a man and a woman and vice versa, It is possible that in a couple of husbands, boyfriends or lovers, the woman is or behaves in a rougher and more masculine way, whether she is already a lesbian, on the contrary, they are different postures of the diversity of thoughts that form the personality of the individual.

The passive homosexual, even though he may behave under the characteristics of his personality using feminine gestures, these particularities are not always visible in the eyes of society and his family, because although he is gay, he does not show it with his actions, perhaps hiding his identity or simply being homosexual for him is being the way he is, and that is part of the diversity that we must respect.

Homosexuals who transgress principles of normality, ethics and moderation are the ones who disappoint some groups who still live as people camouflaged in the falsehood of idiosyncrasy despising and condemning attitudes of other homosexuals.

But this stereotypical thinking is fragmented with the great expectation that had the first American series *The Boys in the Band*, in the 1970s that although it had great success in his country, the world reference to break schemes of homophobia and harassment to the GLBT population being so that the visibility of the GLBT population is respected and that the rights of the same are claimed as human rights.



Figure 1 (Zerpa) Stereotypes under the heteronormative gaze

The scientist Guillermo Nuñez says: "A macho man cannot love, because to love implies "cracking, opening up" to let the other into us, and a macho man cannot do that, therefore, he is condemned not to love". Other expressions of machismo among gay men is the role that arises from the outcome of a love relationship where if both in a couple consider themselves very macho, both will encounter the same behaviours, as both were equally educated to act as machos and in a relationship that complete balance unleashes a lack of complementarity in the couple, and that relationship will cool down due to the absence of naturalness.

The patriarchal society

The problem of our patriarchal society is not that we are taught to be men, because in reality we are taught not to be women, that is to say that everything related to the feminine (including homosexuals) is frowned upon by society, judged for not respecting the balance of the normality of the genders and their roles as men or women.

Example: H. M. who decided to study fashion design is not gay, but his parents, who opposed him to make such a decision, still believe that he is homosexual because working in the area of fashion and clothing design is exclusively related to a woman's role, when in fact it is not so.

If a woman enters the world of fashion, nothing happens, if a man enters, the first thing that comes to mind is that he is gay, so it would be sexist because it relates women to clothes, and before women only sewed and took care of the children and the house (unfortunately), when it is valid for everything, and homophobia, because you can be attracted to fashion and be heterosexual, as is the case.

Until a long time ago, the feminine was associated as evil and a psychological illness, relating the homosexual as weak, the absence of masculinity and authority.

Homosexuals try to imitate feminine gestures, show (often exaggerated) behaviour and have an inclination for certain careers that are mistakenly considered feminine.

In this case, machismo is damaging to men themselves, because if a man tries to do something where there are more women, such as a career in nursing or social work, etc., he tends to be considered effeminate or gay. But on the other hand, if a woman does something where there are not many women (network and systems programming, civil engineering, management positions, presidency, etc.) it is seen as an achievement, a vindication, not as something negative. This is why machismo is also detrimental to men themselves. Rigid standards that try to shape our behaviour and tastes make no sense. The two go hand in hand and serve no good purpose.

Respect for how each person with a diverse sexual orientation is seen in Sucre Bolivia is protected under municipal ordinances, supreme decrees, norms and articles and even the Political Constitution of the Plurinational State of Bolivia itself; a broad legislation but in the lively society of Sucre it is difficult to accept the recognition of diverse sexual orientations, due to the fact that the same population is characterised by being macho, cultured, conservative and fundamentalist in Roman Apostolic Christianity.



Figure 2 Activity held on 30-05-2014 for the presentation of the first annual report on LGBT HR

The image shows the activity carried out in coordination with the gay human rights activist and representative of the Coalibol Weimar Mansilla, activity aimed at the different governmental and non-governmental organisations of the city of Sucre, where each representative of the different institutions was given a book being the first report of Human Rights of the GLBT population where shocking results are shown of the great problems that the GLBT community demands from the Bolivian society both in its acceptance and its legislation.

There was a massive participation of different schools and non-governmental organisations that contributed to the success of the different activities carried out through the cooperation of the Mayor's Office and other organisations.

The challenge for the next administration of Evo Morales, constitutional president of the plurinational state of Bolivia, was to address one of the most crucial issues, civil marriage and homoparental egalitarian marriage.

Activism in the city of Sucre does not have an institution that works or is legally established, but activism with other organisations continues to strengthen the LGBT community.

There are more than 100 people who are visible to society and declared to be of different sexual orientation, this population is conforming three groups or families such as: Revelación, a group formed by trans kids (transvestites, transsexuals, transgender, and transformists), the gay group Miupsa, the CDC a group of help to the LGBT population that gives empowerment workshops, Vivo en Positivo a group that works in both primary and secondary prevention and the Coalibol with a representative for training and the defence of human rights of the LGBT population to the Sucre society Huellas a group of integrated by lesbians.

Through the different activities promoting the defence and vindication of the human rights of people with different sexual orientations, starting from the basis of machismo and patriarchy that has been affecting the general population as well as the LGBT community for many years, it is said that the empowerment of homosexuals has been a key factor in the development of the LGBT community in Sucre: that the empowerment of homosexuals who live with their sexual identity and are proud of it is becoming stronger and stronger, they cannot be despised, much less discriminated against in the different activities they carry out, in which we can highlight the mistreatment or contempt at work, the lack of professionalism in the health area towards people identified as LGBT, the lack of education of parents in the treatment of their children on the subject of acceptance and respect towards other people, the lack of dialogue between the affected population and the church, since the monarchy was a misused product of the church.

Discussion

The construction of ideas of femininity and masculinity in homosexuals.

The patriarchal society of Sucre establishes a division between masculine and feminine gay men in which it generates an unequal and asymmetrical relationship where the masculine homosexual tries to look for an equal partner and there are also those who seek to have affection with one who is masculine, these realities lead to the creation of an idea of classification in sexual diversity, this process maintains dominant patriarchal structures.

The individuals associated with these couples as friendships adjectivise these couples and the behaviour they demonstrate are stigmatisations of judgement and macho criteria with questions such as: "Why are you going out with a faggot who is genderqueer? why do you fall in love with a woman and that's it?"

In groups of friends, these types of criteria flow, and because of the different ways of thinking and the fact that they are not visible to society, they judge others who are.



Figure 3 Social incidents in the Plaza Iberoamericana 25 de Mayo Sucre Bolivia

(Meléndez) This gives rise to concepts such as "sissyphobia", which in Spanish can be translated as "jotofobia", which refers to the rejection of gay men with very feminine roles and traits.

Conclusions

The role of the gay man has condemned the image of the homosexual man, a man who discovers his love or desire for other men stigmatises with machismo those who are not to his liking and whose attitudes do not fit the stereotype of a manly man, despising the behaviour of effeminate homosexuals, but at the same time, effeminate gays also discover that they can hide it to a greater or lesser degree of exaggeration in order to be accepted by others who have macho behaviour and on many occasions, decide to exaggerate their macho behaviour to avoid being found out.

Obviously the fear of being discovered is because the homosexual has swallowed the story that if he is not like the heterosexual macho model, he is less valuable; and tries to hide it, it is because he despises himself, the stigmatism itself is born from the family, linked to a conservative, fundamentalist and religious society coming from parents and society in general.

Motivated by ancestral and colonial traditions in which people had to be subdued in a boom of machismo in which the man of the house was the one who had all kinds of privileges, but the woman was treated as the person who had to endure certain subjugation.

Changing the role of people with different sexual orientations and machismo among gays themselves leads to the undervaluing of homosexuals who adopt a feminine stance, making the machismo of male and female genders something cyclical in the GLBT community, with the same prejudices and even a higher rate of violence than in a heterosexual society.

References

Balutet, n. *Las paradojas de fresa y chocolate* (1993), de tomás gutiérrez alea.

Sánchez, t. E. R. (2011). La homofobia y su relación con la masculinidad hegemónica en México. *Revista puertorriqueña de psicología*, 22, 101-121

González claverán, v. (2012). Un documento colonial sobre esclavos asiáticos.

Pazmiño, s. A. (2012). El estado y el clóset. *Ciudadánías sexuales en Ecuador y Bolivia. Le monde diplomatique en español*, (197), 25-26.

Vélez, a. L., correa, s., cerruti, s., figueroa, j. G., de edición, g., gómez, m. L. M.,... & polanco, m. Ministerio de la protección social fondo de población de las naciones unidas-unfpa promoción de los derechos sexuales y reproductivos y de la salud sexual y reproductiva en la población colombiana convenio 620.

Rauld, j. C. *Las relaciones del poder y la sexualidad. Aproximaciones políticas preliminares para una investigación en torno a la familia homosexual desde el trabajo social.*

Rauld, j. C. *Las relaciones del poder y la sexualidad. Aproximaciones políticas preliminares para una investigación en torno a la familia homosexual desde el trabajo social.*

Turizo, j. M., & iglesia, m. A. (2011). Conquistas legales no traducen ipso facto conquistas sociales. Especial referencia a los reconocimientos jurídicos de la comunidad lgbt. *Justicia juris*, 7(1), 79-92.

Grajales mejía, m. (2013). Propuesta de comunicación para promover la visibilización e inclusión de la comunidad lgbt en bogotá.

Grajales mejía, m. (2013). Propuesta de comunicación para promover la visibilización e inclusión de la comunidad lgbt en bogotá.

Turizo, j. M., & iglesia, m. A. Comunidad lgbt: historia y reconocimientos jurídicos.

Ríos, d. W. L. C., el título, t. P. O. P., de maestría, e. S. P., & epidemiología, m. (2014). Sobre el vih-sida, en la población de 15 a 34 años de la ciudad de el alto, en el año 2010”.

Ajila, v., & mesa, l. (2011). Conomientos, actitudes y prácticas de los estudiantes del ciclo diversificado de los colegios fiscales de la ciudad de atuntaqui sobre prevención del vih/sida de enero a agosto 2010.

Gottsbacher, m. De inseguridad excluyente a la construcción de seguridad legítima.

Primer informe de derechos humanos de la población lgbt bolivia 2013 pág. 25,43-44

Masculinidades una mirada retrospectiva a la sociedad de bolivia 2013

Causes Influencing School Failure**Causas que influyen en el Fracaso Escolar**

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Abstract

The article aims to analyze school failure, identifying the causes of poor academic performance and dropout students 6 "A" of "Cardenal Maurer" Educational Unit. In this regard it was decided to implement surveys teachers indicated instructional unit, thus identifying the shortcomings in the use of teaching methodology and pedagogical support from teachers, in order to conduct an objective analysis data that can be obtained from surveys, and learn more about the process of teaching and learning which students spend.

Academic failure, Academic performance, Teaching and learning process

Resumen

El artículo tiene como objetivo analizar el fracaso escolar, identificando las causas del bajo rendimiento académico y la deserción escolar de los alumnos 6 "A" de la Unidad Educativa "Cardenal Maurer". En este sentido se decidió aplicar encuestas a los docentes indicados de la unidad educativa, identificando así las deficiencias en el uso de la metodología de enseñanza y apoyo pedagógico por parte de los docentes, con la finalidad de realizar un análisis objetivo de los datos que se pueden obtener de las encuestas, y conocer más sobre el proceso de enseñanza y aprendizaje que pasan los estudiantes.

Fracaso escolar, Rendimiento académico, Proceso de enseñanza y aprendizaje

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† Researcher contributing as first author.

Introduction

It is of great importance that the population knows what is the school failure in the educational units since it is a very serious problem because most of the students of the primary level have stumbles when passing to the secondary level.

For this reason, the following article is intended to know the main causes of school failure in the educational unit Cardenal Maurer.

The article is composed of 4 sections, the first section refers to the methodology applied for data collection, the second section comprises the theoretical foundations on teaching and learning process, academic redeeming and motivation, school failure, the third section shows the results of the data obtained through the survey, finally in the fourth section there is an analysis and discussion.

Methodology

The type of study carried out was descriptive, so the methodology used for this article was a quantitative methodological design, with the use of the survey technique and its instrument, the questionnaire.

For this study, the total population was 25 teachers, of which 10 teachers from the Cardenal Maurer educational unit were taken as a sample.

Theoretical foundations

In the Bolivian Plurinational Education System, we have a total of 1,811,152 primary school students, 115,153 of whom will repeat a grade, which represents 6.35% of the total number of students. Of the 576,919 secondary school students, 8.83%, i.e. 50,963 will repeat the year. www.minedu.gob.bo.

Based on the data at the Bolivian level with regard to education, it can be said that six primary school students and eight secondary school students out of every one hundred cannot pass the year with the consequent problems that this entails at the psychological, emotional and self-esteem levels.

Martinez (2012) there are endogenous causes. They are intrinsic to the child. Organic. Their affection is physical or sensory. These problems can hinder academic performance. Intellectual. The child presents a curricular gap with respect to his or her chronological age Affective. They are caused by affective deficiencies or overprotection. Exogenous causes. They are extrinsic to the child.

They are part of their environment: family, school, society. Misaligned schedules. Saturation of school tasks, difficulty of these tasks... Rigidity of the system. The starting point is egalitarianism.

Lack of motivation. Disconnection between the learning contents taught at school and the needs demanded by society, Lack of teacher-student interaction that fosters security and confidence. This aspect can be a determining factor in the possible success or failure at school. [Martínez-Martínez, a. M., Padilla-Góngora, D., López-Liria, R., Fernández, I. R., & Mora, 2012: 539].

a) Teaching and learning process

Learning is a process carried out by the learner when he/she interacts with the object and relates it to his/her previous experiences, taking advantage of his/her capacity to know in order to restructure his/her mental schemas, enriching them with the incorporation of new material that becomes part of the subject who knows.

Learning is the interaction of teacher-student in order to enrich affective knowledge and thus reach the desired goal.

The object is learned differently by each subject, because the experiences and capabilities of each individual present unique characteristics.

Meaningful learning is achieved through activities that the learner can do and that give him/her some satisfaction when he/she does them, but above all, that are related to what he/she learns and to his/her own experience, so that they integrate learning experiences. When what needs to be learned is related to the interests and needs of the subject, he/she will establish relationships between his/her previous experiences and the object, and the learning process will be properly completed.

b) Academic performance

According to Freire Ramos, I. A. (2013) academic performance is the level of knowledge of a student measured in an evaluation test. In addition to the intellectual level, extroversion, introversion, anxiety and motivational personality variables are involved, whose relationship is not always linear, but is modulated by factors such as level of schooling.

In other words, the result of the assessment reflects the effort made by the teacher in the teaching-learning process and the results shown by the student in the evolutions through the set of indicators that gather information on learning.

Academic performance is not only the result of the student's effort, but also of the joint effort of the family, society and the educational community.

c) School motivation

School motivation is a general process by which behaviour is initiated and directed towards the achievement of a goal. "This process involves both cognitive and affective variables: cognitive, in terms of thinking skills and instrumental behaviours to achieve the proposed goals; affective, insofar as it includes elements such as self-esteem, self-concept, etc. "[Alcalay and Antonijevic, 1987: 29-32].

According to the Royal Spanish Academy, motivation is a mental rehearsal preparatory to an action in order to encourage or encourage oneself to carry it out with interest and diligence.

d) School failure

Martínez, Padilla, López, Fernández & Mora (2012) point out that school failure is when a student does not manage to pass the course, is procrastinating in one or more subjects, with the consequent danger of not passing the course. In other words, the school and the parents set a goal for the student of a certain age and at the time that goal is not met, failure affects everyone and the most affected in any case is the student who does not succeed. As a member of society he needs help and society has to respond.

On the other hand, for Muñoz, González, & Domínguez (2009), school failure may be due to accumulated difficulties in learning after several years. The data or reports that can be used come to coincide in the child, who has; reading and comprehension problems: who is slow when it comes to grasping oral language lack of concentration: his level of attention is inconsistent and insufficient, who is not connected in real time to what is happening. Lack of maturity: he does not understand what is going on around him. Inadequate posture: he is untidy.

In this sense, it can be understood that the increase in school failure is nothing more than the increase in failure as a teacher.

Results

The following table shows the answers to the questionnaire applied to 10 teachers out of a total of 25 With the information obtained, a content study of the most relevant data collected was carried out. These are the answers to the 7 questions:

Questions		N°	%
there is such a thing as school failure	yes	7	70%
Causes for the school failure	Missing from capacity of fluency and concentration		
Influence of the methodology	yes	6	60%
Tact pedagogical	yes	9	90%
How to avoid The school failure		5	50%
Support support in the intervention with students	yes	5	50%
Support pedagogical support to improve the process teaching process and learning process	yes		60%

Table 1

Analysis and discussion of results

The results show that most of the teachers affirm that there is school failure in the Cardenal Maurer educational unit, indicating that the causes of school failure in 6th grade students are: physical causes, lack of fluency and concentration, and emotional and affective temperament.

Of all the indicators, the greatest cause of school failure was Lack of fluency and concentration, reaching 45%.

On the other hand, to the question "Do you think that the use of inadequate methodology influences the academic performance of students? To which the respondents answered yes, since 60% of the total respondents answered that the methodology used is inadequate for academic performance and 40% acknowledged that it is adequate.

This indicates that most of the teachers do not agree with the teaching-learning methodology used by the teachers in the class, i.e. the teacher is not making correct use of the contents.

In terms of the interest that the teacher takes in his students, this is reflected in what is known as the pedagogical touch. 90% of the teachers answered that they use the pedagogical touch and 10% answered that they do not. This means that the teacher is able to interpret the real situation of each student.

It is important that it is the teachers themselves who have initiatives to prevent school failure, so the question was asked: How could the teacher prevent school failure? 50% answered with Coordination and follow-up of parents and teachers, 20% with motivation, 10% with Feeding and motivation, 10% with Methods and Techniques and 10% with none.

This means that most of the teachers would avoid school failure with a good coordination and follow-up of parents and teachers.

Following this question, it was necessary to know the constant support of the students, as the teachers affirmed that there is constant support in the classroom, but others answered that there is not.

This indicates that there is little commitment to the education of the students, since 50% said that they do not constantly support their students in the classroom, this may be due to the fact that the number of students is greater.

As for pedagogical support within the educational unit, 60% said no and 40% said yes, which shows that there is no pedagogical support for the students in the classroom.

Conclusions

The statistical data with the highest percentages indicate that there is school failure, which is confirmed by the data obtained in the data. Among the variables that determine school failure is the support of the teacher who only fulfils the role of a teacher without taking into account the integral formation of the students for an optimal level of learning in the classroom.

It is very important that teachers take into account the attitudes of the students as this determines the role of learning in the classroom, taking into account the problems they present in order to help them grow as human beings and to be men of society capable of responding to the social task.

It is vitally important for parents to be involved in their children's education from an early age, as this is the most effective way to avoid future failures.

Knowing that any health problems, lack of motivation, insecurity, fears, etc., that they see in their children must be treated in time, could be the first step towards failure.

The collaboration of all the actors involved in the teaching and learning process, educators, parents, teachers, is extremely important.

All the actors involved in education must take into account the attitudes of groups and individuals, and if there is any deviation, the corresponding measures must be taken in order to avoid future school drop-outs, which must be faced with a flexible, dynamic attitude and above all with a lot of understanding and love.

Being patient and observant, orderly and systematic, but also being practical and above all having a lot of confidence, being aware of the help given to a student can make him/her more skilful, independent, confident, stimulating growth, creativity, curiosity, independence and the ingenuity of the students, favouring happiness in their childhood and adult life.

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References

- Freire Ramos, I. A. (2013). La disciplina y su incidencia en el rendimiento escolar de los estudiantes del séptimo año del centro de educación básica "Joaquín Arias" del cantón Pelileo de la provincia del Tungurahua (doctoral dissertation).
- Gates, Z. Experiencias de implementación de la educación intercultural bilingüe para el pueblo Wichí-Weenhayek a ambos lados de la frontera Argentino-Boliviana
- Granado, J.M.A. (2011) interacciones personales entre docentes y estudiantes en el proceso de enseñanza y aprendizaje. *Acutualidades investigativas en educación*.
- Martínez-Martínez, a. M., Padilla-Góngora, D., López-Liria, R., Fernández, I. R., & Mora, D. P. (2012). La evaluación del aprendizaje y el fracaso escolar. *International journal of developmental and educational psychology*, 1(1), 533-540.
- Martín-Pastor, E., González-Gil, F., & Moreno, F. ¿qué dificultades percibe el alumnado inmigrante en el contexto educativo?
- Muñoz, J. M. E., González, M. T. G., & Domínguez, B. M. (2009). El fracaso escolar como exclusión educativa: comprensión, políticas y prácticas. *Revista iberoamericana de educación*, (50), 41-64.
- Sanchidrian, N.V. Experiencias en el aula de inglés: un taller de cuentacuentas en la escuela oficial de Idiomas (EOI).
- Vázquez, C., & Anaisi, C. (2013). El maltrato infantil influye en el rendimiento escolar de los niños (as) del tercer año de egb de la escuela fiscal mixta Jorge Carrera Andrade, parroquia Eloy Alfaro, cantón Quito, provincia Pichincha (doctoral dissertation).
- Viñan, M., & Veloz, K. (2012). Factores biopsicosociales que influyen en el rendimiento escolar de los alumnos de sexto y séptimo año de educación básica paralelo "b" de la escuela fiscal Dra. "Luisa Martín González" del cantón naranjito (doctoral dissertation)

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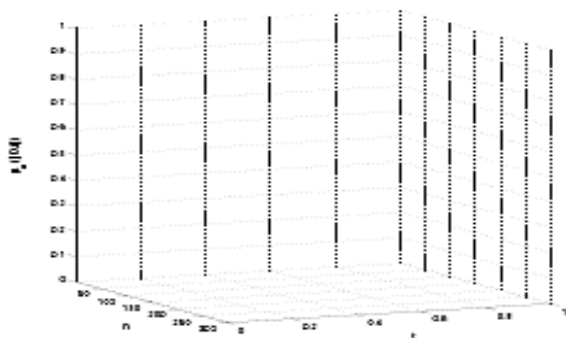
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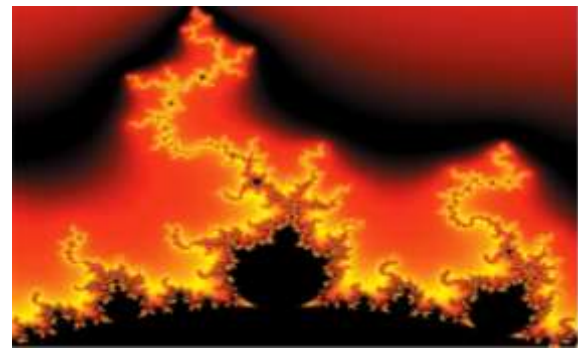


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