

Volume 2, Issue 2 — January — June-2016



**E
C
O
R
F
A
N**

Journal- Republic of Nicaragua

ISSN-On line: 2414-8830

ECORFAN®



ECORFAN-Republic of Nicaragua

Indexing

- Google Scholar
- Research Gate
- REBID
- Mendeley
- RENIECYT

ECORFAN-Republic of Nicaragua

Directory

CEO

RAMOS-ESCAMILLA, María. PhD

CAO

ZAPATA-MONTES, Nery Javier. PhD

Director of the Journal

IGLESIAS-SUAREZ, Fernando. BsC

Logistic Edition

PERALTA-CASTRO, Enrique. MsC

Designer Edition

SORIANO-VELASCO, Jesús. BsC

ECORFAN Journal-Republic of Nicaragua, Volume 2 Issue 2, January-June 2016, is a journal edited semestral by ECORFAN. First Avenue Southwest, San Sebastian area, León, Republic of Nicaragua. P. C. 21000.WEB: ww.ecorfan.org/republicofnicaragua/, journal@ecorfan.org. Editor in Chief: RAMOS-ESCAMILLA, María. PhD. ISSN-2414-8830. Responsible for the latest update of this number ECORFAN Computer Unit. ESCAMILLA-BOUCHÁN, Imelda. PhD, LUNA-SOTO, Vladimir. PhD, First Avenue Southwest, San Sebastian area, León, Republic of Nicaragua. C.P. 21000, last updated June 30, 2016.

The opinions expressed by the authors do not necessarily reflect the views of the editor of the publication.

It is strictly forbidden to reproduce any part of the contents and images of the publication without permission of the Intellectual Property Register, Republic of Nicaragua.

Editorial Board

JOVEL, Juan. PhD
University of Alberta, Canada

AKER, Charles. PhD
Universidad Nacional Autónoma de Nicaragua, Republic of Nicaragua

MEDAL, Julio. PhD
University of Florida, U.S.

ALVARADO-FLORES. Jesús, PhD
Scientific Research Centre of Yucatan, Unit of Water Science, Mexico

BARRIENTOS-PRIEGO, Alejandro F. PhD
Universidad Autónoma Chapingo, Mexico

LEYVA-MYR, Santos Gerardo. PhD
Universidad Autónoma Chapingo, Mexico

NARVÁEZ-SOLÍS, Concepción. MsC
Universidad Nacional Autónoma de Nicaragua, Republic of Nicaragua

NIETO, Margarita. MsC
Universidad Nacional Autónoma de Nicaragua, Republic of Nicaragua.

FLORES-PACHECO, Juan Asdrubal. MsC
Universidad Valladolid, Spain.

MAYDANA-OJEDA, Marco. MsC
Universidad Católica Nuestra Señora de la Asunción, Paraguay

Arbitration Committee

RGG, MsC

Universidad Autónoma Chapingo, Mexico

DRM, MsC

Universidad Autónoma Chapingo, Mexico

JMM, MsC

Universidad Autónoma Chapingo, Mexico

LVH, MsC

Universidad Autónoma Chapingo, Mexico

PPJU, MsC

Universidad Autónoma Chapingo, Mexico

ANCE, MsC

Universidad Nacional Autónoma de Nicaragua, Republic of Nicaragua

MMLF, MsC

Universidad Nacional Autónoma de Nicaragua, Republic of Nicaragua

GRF, MsC

Universidad Minuto de Dios, Colombia

FTCM, BsC

Universidad Autónoma Chapingo, Mexico

SÁAS, BsC

Universidad Autónoma Chapingo, Mexico

Presentation

ECORFAN Journal-Republic of Nicaragua is a research journal that publishes articles in the areas of:

Agriculture, **F**orest Pathology, **S**ustainable Forest Management, **H**orticulture and **E**ngineering and Integrated Water Use

In Pro-Research, Teaching and Training of human resources committed to Science. The content of the articles and reviews that appear in each issue are those of the authors and does not necessarily the opinion of the editor in chief.

In Number 1st presented an article Determination of the water irrigation quality on the heavy metals concentration in agricultural soil and maize cultivated in the Valle del Mezquital, Hidalgo, Mexico by VÁZQUEZ-NÚÑEZ, Edgar & HERRERA-TELLEZ, Mario with adscription *Universidad de Guanajuato, Universidad Tecnica de Tula-Tepeji*, next article Estimation of energy potential of the main crop residues generated in the state of Hidalgo, Mexico by VÁZQUEZ-NÚÑEZ, Edgar, VALLE-GARCÍA, Jessica Denisse and FRÍAS-MARTÍNEZ, Teresa Yadira with adscription *Universidad de Guanajuato, Universidad de Tula-Tepeji*, next article Ancient Vegetables from Campeche between Disuse and Oblivion of the Current Consumer by NIÑO, Naú, BOLÍVAR, Nidelvia and VALENCIA, Marvel with adscription *Universidad Autónoma de Guerrero*, next article Freedom and education in postmodernism by GARCÍA-GONZÁLEZ, Alejandro.

Content	Article	Page
Determination of the water irrigation quality on the heavy metals concentration in agricultural soil and maize cultivated in the Valle del Mezquital, Hidalgo, Mexico		1-6
VÁZQUEZ-NÚÑEZ, Edgar & HERRERA-TELLEZ, Mario		
Estimation of energy potential of the main crop residues generated in the state of Hidalgo, Mexico		7-12
VÁZQUEZ-NÚÑEZ, Edgar, VALLE-GARCÍA, Jessica Denisse and FRÍAS-MARTÍNEZ, Teresa Yadira		
Ancient Vegetables from Campeche between Disuse and Oblivion of the Current Consumer		13-19
NIÑO, Naú, BOLÍVAR, Nidelvia and VALENCIA, Marvel		
Freedom and education in postmodernism		20-44
GARCÍA-GONZÁLEZ, Alejandro		
<i>Instructions for Authors</i>		
<i>Originality Format</i>		
<i>Authorization Form</i>		

Determination of the water irrigation quality on the heavy metals concentration in agricultural soil and maize cultivated in the Valle del Mezquital, Hidalgo, Mexico

VÁZQUEZ-NÚÑEZ, Edgar†* & HERRERA-TELLEZ, Mario

Sciences and Engineering Division, Universidad de Guanajuato, Leon, Guanajuato, Mexico. MX37150

Environmental Engineering Department, Universidad Tecnica de Tula -Tepeji, Tula de Allende, Hidalgo, Mexico. MX42830

Received January 20, 2016; Accepted May 30, 2016

Abstract

Determination of the water irrigation quality on the heavy metals concentration in agricultural soil and maize cultivated in the Valle del Mezquital, Hidalgo, Mexico. The Valle del Mezquital, located in Hidalgo State, Mexico, is the largest area around the world irrigated with no treated wastewater generated in the Mexico City Valley. In order to determine the effect of the quality water on the heavy metals concentration in agricultural soil and maize samples, an analytical study was carried out in experimental agricultural fields irrigated with wastewater treated under different treatment levels.

The irrigation water analyzed were: rain water (CTR-W), no treated wastewater (NTR-W) and wastewater anaerobically digested (ADG-W) and were physically and chemically characterized; the pH, electrolytic conductivity, organic matter, carbonates, nitrates and nitrites, metals (Fe, Zn, Mn, Cu, Cr and Pb) were determined in water samples by using spectrophotometric methods. The soil samples were analyzed and the same parameter were determined. The metal concentration in maize samples was determined as in soil and water samples. The data were linearized by Kruskal Wallis method and the statistical analysis was performed. It was not found an effect of the irrigation water on the heavy metal concentration in soil; contrarily the concentration of metals in maize samples increased in soils irrigated with no treated wastewater; the organic matter and salinity as electrolytic conductivity in soil increased.

Heavy metals; Agricultural soil; Maize; Wastewater; Valle del Mezquital

Citation: VÁZQUEZ-NÚÑEZ, Edgar & HERRERA-TELLEZ, Mario. Determination of the water irrigation quality on the heavy metals concentration in agricultural soil and maize cultivated in the Valle del Mezquital, Hidalgo, Mexico. ECORFAN Journal-Republic of Nicaragua 2016, 2-2: 1-6

* Correspondence to Author (email: ed.vazquezn@gmail.com)

† Researcher contributing first author.

Introduction

Heavy metals are ubiquitous in the environment, as a result of both natural and anthropogenic activities, and humans are exposed to them through various pathways (Wilson and Pyatt, 2007). Wastewater irrigation, solid waste disposal, sludge applications, vehicular exhaust and industrial activities are the major sources of soil contamination with heavy metals, and an increased metal uptake by food crops grown on such contaminated soils is often observed. In general, wastewater contains substantial amounts of beneficial nutrients and toxic heavy metals, which are creating opportunities and problems for agricultural production, respectively (Chen et al., 2005; Singh et al., 2010).

Contamination of soils by heavy metals, such as Cd, Ni, Zn, Pb, and Cu, has increased dramatically during the last few decades (Chibuike and Obiora, 2014) due to human activities (Morgan, 2013; Chibuike and Obiora, 2014). Contamination of soils by heavy metals is now widespread (Al-Naggar et al., 2013). Land degradation caused by heavy metals has significant adverse effects on the environment and ecosystem worldwide (Li et al., 2013; Chen et al., 2015). Dispersion of heavy metals in irrigated soils and the plants that are growing results in the contamination of food that may be hazardous to humans and animals (Jolly et al., 2013).

The most general symptoms of metal phytotoxicity are stunting and chlorosis (Påhlsson, 1989). It is not clear whether or not heavy metals in leaves interfere with photosynthesis. Various laboratory experiments have indicated that photosynthesis is influenced by heavy metal ions.

Inhibition of the whole plant net photosynthetic rate which was accompanied by reduced transpiration rate has been attributed to a Cd-induced closure of the stomata (Clijsters). Heavy metals reduce the chlorophyll content (Assche, 1990). Schützendübel et al. (2002) suggested that many heavy metal effects on plant metabolism are most probably of only secondary importance.

The Mezquital Valley is one of the oldest and largest examples worldwide of an agricultural irrigation system using municipal wastewater (Jiménez and Chávez, 2004). At present, 900 km² of previously semi-arid land is irrigated with untreated wastewater. As a consequence of wastewater irrigation, the original flow of the Tula River, the main river in the valley, has increased from 1.6 to 12.7 m³/s in the last 50 years (DFID, 1998). Bacterial contamination, chemical pollution of water, and contamination of vegetable crops through irrigation water are the main problems associated with wastewater irrigation in the Mezquital Valley (Downs et al., 1999).

The aim of this experimental work was determine the effect of the wastewater irrigation quality in terms of heavy metals concentration of the quantitative presence of these elements in agricultural soil and biomass of the maize cultivated in it.

Materials and Methods

All the samples were taken per triplicate, for the soil samples nine sites were selected per treatment and the same number of biomass samples, three samples per triplicate were taken for water samples per treatment. The number of samples was: 81 samples for soil, plant and biomass, the total number of samples was 243.

Sampling site and soil characteristics

The soil samples were taken from agricultural soil from the municipality of Tula de Allende (N.L. 19°58'.W.L. 99°18') and cultivated with maize and irrigated with wastewater treated at different levels e.g. no treated wastewater (NTW), anaerobically digested wastewater (ADW) and rainwater (RW) used as control. The sample consisted in one kilogram of soil taken by using a soil non metallic sampler.

The parameters determined were: Electrolytic Conductivity (EC), pH, Total Carbon (TC), Total Nitrogen (TN), Particle Soil Distribution (PSD) and the follow elements B, Se, Cr, Al, Cd, Cu, Fe, Mn, Ni, Zn, As and Pb.

Wastewater samples

The wastewater was sampled before receiving the anaerobic treatment (NTR-W) and after the anaerobic treatment (ADG-W), the rain water was sampled (CTR-W). All the water samples were physical and chemically characterized. The water sample of water consisted in 500 ml of water, stored in acidic solution for the metal determination and in a preservative solution

The parameters determined in water samples were: turbidity, pH, EC, Total Dissolved Solids (TDS), Chemical Oxygen Demand (COD), Biochemical Oxygen Demand (BOD), TN, Total Phosphorus (TP) and the same elements determined for soil samples.

Biomass samples

The maize plants were selected in the productive stage (presence of cobs). The biomass was taken from roots, plant stem and leaf.

The biomass sample was taken by using a plastic knife in order to avoid the metal contamination.

Pre treatment of samples

Soil samples

The soil samples were passed separately through a five mm sieve for removing organic and mineral matter. The samples were storage in plastic bags until the laboratory analysis.

Water samples

The water samples were transported o the laboratory at 4°C and then stored at same temperature and darkness. The acidic digestion for the metals determination was done into the 24 hrs. after the sampling.

Biomass sampling

The biomass was sotareg in paper bags. In the laboratory, the material was selected, washed with distilled water, part of the material was analyzed in fresh, other was dried in an oven at 100 °C and stored in plastic bags under darkness conditions until the conditioning for analysis.

Determination of parameters

Soil characteristics

The pH, EC and PSD were determined (Black et al., 1965). The TC content in soil was measured according to the method reported by Tiessen et al. (1993). The N was determined by the Kjeldhal method (modified by Brenner, 1965).

Water characteristics

The characterization of the wastewater and rainwater samples were done according the methods published by Melcer (2003).

Biomass

The elements determination was done by using the spectrophotometric method in an equipment SpectrAA 220, Varian, after an acidic digestion according to the modified method of Tüzen (2003).

Results

The table 1 shows the physicochemical values of the analyzed soils.

Site	EC ^a (ds m ⁻¹)	pH	WHC ^b (g kg ⁻¹ soil)	Carbon (mg kg ⁻¹ soil)		Total N (mg kg ⁻¹ soil)	Particle size distribution (%)			Textural classification
				Organic	Inorganic		Clay	Silt	Sand	
S1	2.3	7.9	900	23481	1435	2658	350	280	370	Clay loam
S2	2.6	7.5	680	19542	1682	1689	340	290	370	Clay loam
S3	2.1	7.0	735	16580	650	890	300	250	450	Clay loam

S1: soil irrigated with no treated wastewater
S2: soil irrigated with anaerobically digested wastewater
S3: soil irrigated with rainwater

^aEC: electrolytic conductivity
^bWHC: water holding capacity

Table 1 Physicochemical characterization of analyzed agricultural soils. Average values are shown

The parameters determined to the samples of water are shown in the table 2.

Water	EC ^a (µmhos cm ⁻¹)	pH	TSS ^b	VSS ^c	FSS ^d	TDS ^e	Turbidity (NTU)	COD ^f (mg L ⁻¹)	Total N (mg L ⁻¹)	Total P (mg L ⁻¹)
NTR-W	0.93	7.4	190	128	62	0.53	265	348	36.5	9.5
ADG-W	0.69	7.6	36	24	12	0.47	48	150	17.8	6.5
CTR-W	-	6.4	-	-	-	-	-	-	-	-

NTR-W: no treated wastewater
ADG-W: anaerobically digested water
CTR-W: rainwater

^aCE: electrolytic conductivity
^bTSS: total suspended solids
^cVSS: volatile suspended solids
^dFSS: fixed suspended solids
^eCOD: chemical oxygen demand

Table 2 Physicochemical characterization of irrigation water. Average values are shown

The elements concentration in biomass, soil and water are shown in table 3.

Sample	B	K	Cr	Cd	Cu	Fe	Mn	Ni	Zn	Pb
S1	139.4	125.1	45.6	2.5	17.3	20159.5	451.7	23.4	61.7	7.5
S2	126.2	158.3	32.5	1.9	9.8	14769.4	326.8	12.3	38.2	4.2
S3	354.5	251.7	ND	ND	2.7	19860.2	344.4	16.3	40.2	ND
Mz-S1	4.2	35.2	5.2	2.1	7.2	72.3	134.0	3.2	45.2	ND
Mz-S2	3.8	43.7	8.0	ND	4.3	89.4	82.6	7.7	87.6	ND
Mz-S3	3.5	39.8	ND	ND	6.7	82.1	79.5	7.0	35.1	ND
NTR-W	0.52		0.022	0.0034	0.014	1.5	.05	.21	.64	0.32
ADG-W	0.32		0.025	0.0042	0.004	0.65	0.10	0.003	0.113	0.12
CTR-W	1.2	15	ND	ND	ND	4.0	21	ND	ND	ND

Mz-S1: maize irrigated with non treated wastewater
Mz-S2: maize irrigated with anaerobically digested wastewater
Mz-S3: maize irrigated with unpolluted water

^ads: dry soil
^bdb: dry biomass

Table 3 Elements concentrations in agricultural soil, irrigation water and maize. Average values are shown

Discussion

Soil characterization

The characterization shows physical and chemical parameters in and average range for soil irrigated with unpolluted water, however the soils under wastewater either untreated and treated irrigation have higher levels in WHC, EC, pH, C and N content, it is due to the composition of the wastewater itself.

The pH of the soils sampled in this experiment ranged from 7.0 to 7.9, although values greater than 8.5 have been reported for these same soils in other experiments (Flores et al., 1997). The values for EC do not reflect a salinization effect.

The irrigation of soils with wastewater is not only important for the addition of available nutrients for plants but for the amounts remaining in soils as can be observed as N and C content (Table 1).

The additions of either wastewater and unpolluted water do not impact on the SPD.

Water analysis

Concentrations of Cr, Cd, Cu, Ni, Zn and Pb in both untreated and treated wastewater were lower than the mean daily amount that can be applied as stipulated by NOM-001-ECOL-1996 (SEMARNAP, 1996). Although the concentrations of heavy metals are low in the wastewater, its application over the years could drive the accumulation in soils and then the absorption by plants, facilitating the bioaccumulation in primary consumers. Many studies carried out in agricultural soils in the Valle del Mezquital that have irrigated with wastewater have reported metal concentrations under the values given by the Mexican environmental normativity. (Mendoza-Márquez, 198; Siebe, 1994).

Biomass analysis

The average metals concentration in plant tissue (root, stem and leaves) were into the normal range for trace elements e.g., Zn, Fe, Mn and K.

The plants irrigated with unpolluted water did not present detectable values for Cd, Cr and Pb. The tissue of plants under the ADG-W irrigation did not contain detectable Cd concentration.

The Cr was present in plants irrigated with untreated wastewater. The Pb was not detected in plants under any irrigation regime.

Effects on the growth and production in maize plants were not visually detected.

Conclusion

The irrigation with wastewater of agricultural soils in the Valle del provides high amounts of organic matter (C and N), showing positive effects in terms of high crop yields and reducing costs by eliminating the use of fertilizers, however at long term it could bring negative effects by increasing salinity and compaction in soils.

In this study, the concentration of heavy metals in the irrigation water did not exceed the limits according to the Mexican environmental standards; however, the application for long time could increase the concentration in the soils, affecting the future of crop production.

Acknowledgments

E. V-N thank to the B.V for patient assistance and entire collaboration, and to the Universidad de Guanajuato for the institutional support. The research was funded by CONACYT scholarship.

References

- Assche, F. V., & Clijsters, H. (1990). Effects of metals on enzyme activity in plants. *Plant, Cell & Environment*, 13(3), 195-206.
- Black, C. A., Evans, D. D., & Dinauer, R. C. (1965). *Methods of soil analysis* (Vol. 9, pp. 653-708). Madison, WI: American Society of Agronomy.
- Bremner, J. M. (1965). Total nitrogen. *Methods of soil analysis. Part 2. Chemical and microbiological properties, (methods of soil)*, 1149-1178.
- Chen, T. B., Zheng, Y. M., Lei, M., Huang, Z. C., Wu, H. T., Chen, H., ... & Tian, Q. Z. (2005). Assessment of heavy metal pollution in surface soils of urban parks in Beijing, China. *Chemosphere*, 60(4), 542-551.
- Clijsters, H., & Van Assche, F. (1985). Inhibition of photosynthesis by heavy metals. *Photosynthesis Research*, 7(1), 31-40.
- DFID, Department for International Development; CNA, Comisión Nacional del Agua; BGS, British Geological Survey; LSHTM, London School of Hygiene and Tropical Medicine; UB, University of Birmingham, 1998. *Impact of Wastewater Reuse on Groundwater in the Mezquital Valley, Hidalgo State, Mexico. British Geological Survey Technical Report WC/98/42.*
- Downs, T. J., Cifuentes-Garcia, E., & Suffet, I. M. (1999). Risk screening for exposure to groundwater pollution in a wastewater irrigation district of the Mexico City region. *Environmental Health Perspectives*, 107(7), 553.

- Flores, L., Blas, G., Hernandez, G., & Alcalá, R. (1997). Distribution and sequential extraction of some heavy metals from soils irrigated with wastewater from Mexico City. *Water, Air, and Soil Pollution*, 98(1-2), 105-117.
- Jiménez, B., & Chávez, A. (2004). Quality assessment of an aquifer recharged with wastewater for its potential use as drinking source: "El Mezquital Valley" case. *Water Science and Technology*, 50(2), 269-276.
- Melcer, H. (2003). *Methods for wastewater characterization in activated sludge modeling*. IWA publishing.
- Mendoza Márquez, H., Aguirre Martínez, J., & Athie Lambarri, M. (1981). Land treatment: a viable solution for management of wastewater in the metropolitan area of the Valley of Mexico. In *International Conference on the Status of Knowledge, Critical Research Needs, and Potential Research Facilities* (pp. 163-93). Academic Press.
- Påhlsson, A. M. B. (1989). Toxicity of heavy metals (Zn, Cu, Cd, Pb) to vascular plants. *Water, Air, and Soil Pollution*, 47(3-4), 287-319.
- Schützendübel, A., & Polle, A. (2002). Plant responses to abiotic stresses: heavy metal-induced oxidative stress and protection by mycorrhization. *Journal of experimental botany*, 53(372), 1351-1365.
- SEMARNAP, 1996. Norma Oficial Mexicana NOM-001-ECOL-1996.
- Siebe, C. (1994). *Akkumulation, Mobilität und Verfügbarkeit von Schwermetallen in längjährig mit städtischen Abwässern bewässerten Böden in Zentralmexiko*. Stuttgart: Universität Hohenheim.
- Singh, A., Sharma, R. K., Agrawal, M., & Marshall, F. M. (2010). Health risk assessment of heavy metals via dietary intake of foodstuffs from the wastewater irrigated site of a dry tropical area of India. *Food and Chemical Toxicology*, 48(2), 611-619.
- Tiessen, H., & Moir, J. O. (1993). Total and organic carbon. *Soil sampling and methods of analysis*, 187-199.
- Tüzen, M. (2003). Determination of heavy metals in soil, mushroom and plant samples by atomic absorption spectrometry. *Microchemical Journal*, 74(3), 289-297.
- Wilson, B., & Pyatt, F. B. (2007). Heavy metal dispersion, persistence, and bioaccumulation around an ancient copper mine situated in Anglesey, UK. *Ecotoxicology and environmental safety*, 66(2), 224-231.

Estimation of energy potential of the main crop residues generated in the state of Hidalgo, Mexico

VÁZQUEZ-NÚÑEZ, Edgar†*, VALLE-GARCÍA, Jessica Denisse and FRÍAS-MARTÍNEZ, Teresa Yadira

Universidad de Guanajuato

Universidad de Tula-Tepeji

Received February 24, 2016; Accepted June 2, 2016

Abstract

Hidalgo State is located in the central Mexican plateau, the cultivated area is around of 600,000 Ha, representing the 30% of its total land. The first step for developing the technology based on renewable resources is analysing the bioavailability of these inputs and the theoretical potential that could be generated by using them.

Many studies have calculated the global energy potential ignoring the possible alternative uses that the residues could have, therefore the net energy value is generally overestimated. In order to describe the energy potential availability of the Crop Residues (CR) generated in the state of Hidalgo, Mexico, one quantitative analyses were performed. According to the cultivated area and amount produced, the maize, oat, bean and barley are the most important crops. The crop residues amount was calculated and classified by irrigation district and season of cultivation p.e., spring-summer and autumn-winter. Sustainability concepts were integrated to the energy potential calculation; soil coverage requirements and livestock feeding were considered. The theoretical and energy potentials were calculated for oat, bean and barley. Since the maize residues are used for feeding the livestock, the technical potential was calculated for the maize residues. The technical energy potentials in average were: 14.5 PJ, 8.5 PJ, 3.3 PJ and 1.0 PJ for maize, oat, barley and bean, respectively. Considering the residues conservation in soil, positive values were obtained for oat and maize cultivars (4 PJ and 2 PJ respectively). Negative values were estimated for barley and bean residues. The technical energy potential charge of maize was negative when the residue is used to feed from the 25% to up of total livestock population (porcine, bovine, ovine). The result of this work allows the establishment of different scenarios for policy makers and crop residues management decisions in Hidalgo by integrating both the energy and food sustainability concepts.

Biomass; Crop Residues; Energy Potential; Sustainability

Citation: VÁZQUEZ-NÚÑEZ, Edgar, VALLE-GARCÍA, Jessica Denisse and FRÍAS-MARTÍNEZ, Teresa Yadira. Estimation of energy potential of the main crop residues generated in the state of Hidalgo, Mexico. *ECORFAN Journal-Republic of Nicaragua* 2016, 2-2: 7-12

* Correspondence to Author (email: ed.vazquezn@gmail.com)

† Researcher contributing first author.

Introduction

All societies require energy services to cover basic human needs (lighting, cooking, heating, cooling, mobility, and communication) and for productive processes (IPCC, 2011).

Taking advantage of renewable, non-conventional, sources of energy is a viable and technically feasible alternative to guarantee energy supply (Baxter, 2005).

Among the sources of renewable and non-conventional energy sources we find organic matter or residue from forests and agriculture that is included in the research to contribute to the analysis of sustainability and the environment (Change, 2007).

Some technologies have been developed for taking advantage and generating energy from agricultural residues (AR) (MacKendry, 2002).

In order to determine the energy potential of exploiting available residues generated in the State of Hidalgo, Mexico, it is first imperative to estimate the viability as an alternative source of energy. Due to the volumes of AR generated, as well as the issues related to the final disposal and its management, the employment of these residues appears attractive in terms of energy generation.

Energy Potentials

Energy potential is not just one concept or practice, Angelis-Dimakis and colleagues (2011) classified and defined the different categories of energy potential: Theoretical Energy Potential (ThEP) or available potential energy, Geographic Energy Potential (GEP), defined as the biomass that is generated in spaces dedicated to this pursuit, Technical Energy Potential (TEP), the potential product of extraction of underused or waste biomass in harvesting and processing.

Economic Energy Potential (EEP), this is the result of the economic evaluation of the theoretical potential energy and Implementation Energy Potential (IEP) is a product of political decision making in a geographic region related to economic incentives to exploit biomass.

Crop residues

The State of Hidalgo has a surface area of 2,081,300 ha, of which: 577,000 (30%) is destined for agricultural practices. (SAGARPA, 2013).

The State of Hidalgo contains 84 municipalities, which are grouped into five agricultural districts, which are Tula, Metztlán, Tulancingo, Alfajayucan, Ajacuba, (SIAP, 2016).

Materials and Methods

Crop residues selection

The crop residues in Hidalgo were selected and categorized by the volume (ton/year) generated and by irrigation district.

Data collection

The Agro-Food and Fisheries Information Service (SIAP) data were used. The lapse was from 2005 to 2014.

The data were grouped into annual cycles (autumn-winter, and spring-summer), and for irrigation and rain-fed agriculture.

Potential energy calculation of CR

Theoretical potential energy (ThEP)

To estimate the theoretical potential energy of agricultural waste we used equation 1, for each type of residue and for each residue/product relationship (PRP).

$$ThEP = Y * RPR * A(1 - H) * HHVdm \quad (1)$$

Where,

ThEP: Theoretical Energy Potential (PJ)

Y: Crop yield (Ton/ha)

RPR: Residue-to-Product ratio

A: Production area (ha)

H: Humidity (%)

HHVdm: Highest Heating Value dry mass (PJ/kg)

Sustainable potential energy (SPE)

The sustainable potential energy (SPE) is calculated by using equation 2. This equation is applied according to the soil conditions for each district, and guarantees the conservation of organic material in the soil to avoid erosion or exhaustion of the carbon, and therefore productivity.

If

$$S > E \quad SEP = ThEP - (S * A * HHVdm) \quad (2)$$

$$S < E \quad SEP = ThEP - (E * A * HHVdm)$$

Where,

SEP: Sustainable Energy Potential (PJ)

S: Residues required to maintain 2% organic carbon in soils

E: Covering soils with agricultural residues to avoid at least 10% soil erosion

ThEP: Theoretical Energy Potential (PJ)

A: Production area (ha)

HHVdm: Highest Heating Value dry mass (PJ/kg)

Technical potential energy (TcPE)

The technical potential energy (TcPE) is shown in equation 3, as follows:

$$TcEP = SEP - (DCU * HHVdm) \quad (3)$$

Where,

TcEP: Technical Energy Potential (PJ)

SEP: Sustainable Energy Potential (PJ)

DCU: Demand of residues for competing uses (Ton)

HHVdm: Highest Heating Value dry mass (PJ/kg)

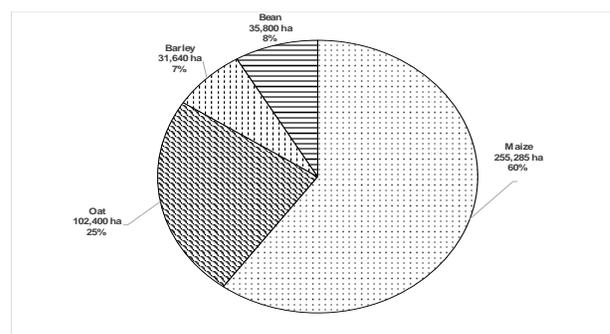
The volume of residues destined to competing uses is estimated considering the use of AR for feeding ovine, bovine, and porcine livestock, therefore we considered the livestock head counts reported by SAGARPA (2014).

Annual requirements for corn and wheat residues were calculated according to the livestock needs (Gallagher et al., 2003).

Results

Cultivated areas and crop production

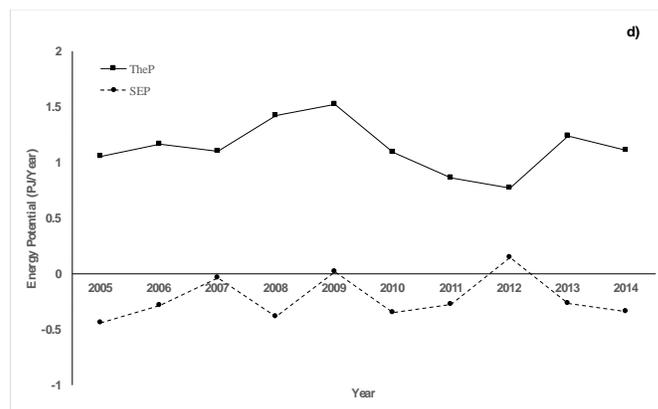
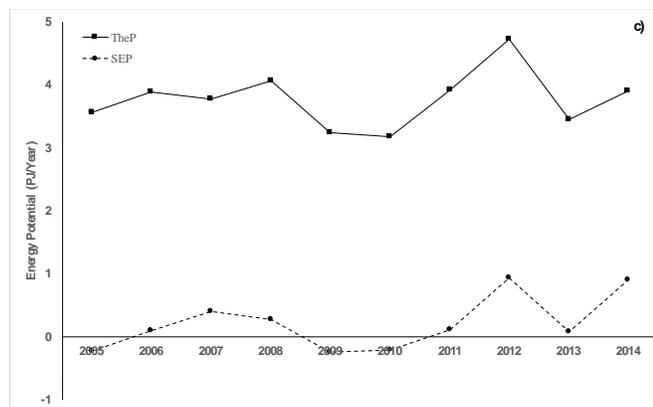
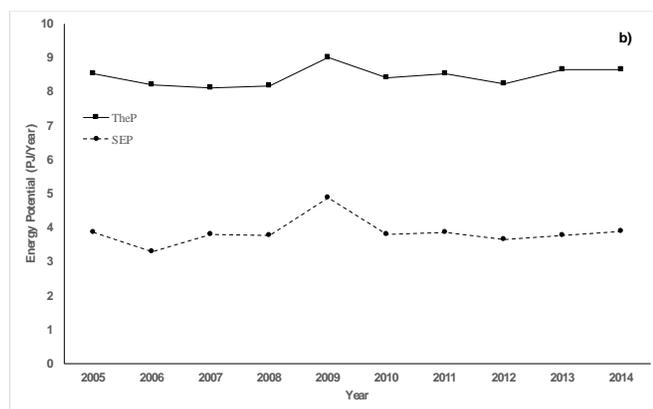
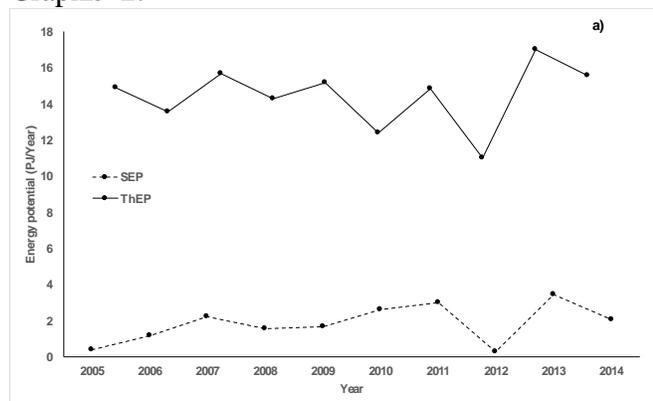
The cultivated area for the crops was estimated (average of ten years). The information is shown in Graphic 1.



Graphic 1 Production of the four most important cultivars in Hidalgo, Mexico

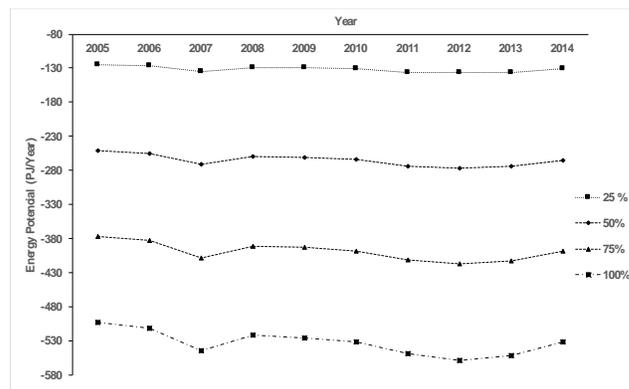
Estimation of the theoretical, sustainable and technical energy potentials.

The theoretical and sustainable energy potentials for the four cultivars were estimated and plotted for the lapse and are shown in Graphic 2.



Graphic 2 Theoretical and Sustainable Energy Potentials for a) maize b) barley c) oat and d) bean crop residues generated during 2005 to 2014 in Hidalgo, Mexico

Under the assumption of the livestock food needs, the technical energy potential was calculated for the maize residues for the same lapse, it was plotted and is shown in Graphic 3.



Graphic 3 TcEP Corn. Behavior according to the percentage of competing with feed for cattle

Discussion

The potential calculated considering the statistical and historical data generates important information in technical, technological and policies areas.

The consideration of factors related with the crops e.g., higher heating value, humidity of the residue, residue-to-product ratio and yield, could give us a better scenario for interpreting the information; is important to determine these factors of the residues in field for better approximation.

The amount of cultivated crops are shown in Graphic 1. The maize crop has the higher volume of production in Hidalgo state, on the other hand the barley crop has the lowest volume production but its energy potential occupies the second place, only behind the maize, and followed by the oat and bean energy potentials (Graphic 2 a, b, c and d).

Employing this residue for feeding 25%, 50%, 75% and 100% of the livestock population were negative from 2005 to 2014 (Graphic 3). These results are important given that the employment of this residue may contribute in aspects beyond generating energy.

Conclusion

Agricultural residues generated in the state of Hidalgo, represent a sustainable source or energy, however, the implementation and development of appropriate technology for taking advantage of the biomass should be done after the inclusion of sustainable development, e.g. use of residues for house building, livestock feeding, carbon sequestration, erosion of soil and loss of fertility in cultivation land.

Acknowledgment

E.V-N would like to thank to B.V for her patient assistance. E. V-N and J.D. V-G received support of the Sciences and Engineering Division, Campus Leon, University of Guanajuato. T.Y F-M received support of the Technical University of Tula-Tepeji.

References

- Angelis-Dimakis, A., Biberacher, M., Dominguez, J., Fiorese, G., Gadocha, S., Gnansounou, E., & Robba, M. (2011). Methods and tools to evaluate the availability of renewable energy sources. *Renewable and Sustainable Energy Reviews*, 15(2), 1182-1200.
- Baxter, L. (2005). Biomass-coal co-combustion: opportunity for affordable renewable energy. *Fuel*, 84(10), 1295-1302.
- Change, I. C. (2007). Mitigation of climate change. Contribution of working group III to the fourth assessment report of the Intergovernmental Panel on Climate Change.
- Edenhofer, O., Pichs-Madruga, R., Sokona, Y., (2011). Fuentes de Energía renovables y mitigación del cambio climático., IPCC. ISBN #978-92-9169-331-3
- Gallagher, P. W., Dikeman, M., Fritz, J., Wailes, E., Gauthier, W., & Shapouri, H. (2003). Supply and social cost estimates for biomass from crop residues in the United States. *Environmental and Resource Economics*, 24(4), 335-358.
- McKendry, P. (2002). Energy production from biomass (part 2): conversion technologies. *Bioresource technology*, 83(1), 47-54.
- SAGARPA, 2013 [online] México. [accessed: 14 de mayo de 2016] Base de datos con información sobre generación de residuos agrícolas, available at: <http://www.gob.mx/sagarpa>.

SAGARPA, 2014 [online] México. [accessed: 14 de mayo de 2016] Base de datos con información sobre uso de de residuos agrícolas, también disponible en: <http://www.gob.mx/sagarpa>.

SIAP, 2016 [online] México. [accessed: 15 de mayo de 2016] Base de datos con información sobre productividad agrícola en México, available at: <http://www.siap.gob.mx/>

Ancient Vegetables from Campeche between Disuse and Oblivion of the Current Consumer

NIÑO, Naú†*, BOLÍVAR, Nidelvia and VALENCIA, Marvel

Universidad Autónoma de Guerrero

Received May 2, 2016; Accepted November 16, 2016

Abstract

Among the goals, we can mention: **a)** exemplifying the traditional vegetables which are replaced in the diet of the people and **b)** synthesizing the consumption that the people hold their plant resources.

The method used was of a mixed nature came together where quantitative and qualitative techniques were used during office and field work, the latter consisted of questionnaire applications aimed at 500 people in four of the eleven municipalities of Campeche. In the applied questionnaires, 15 items about vegetables; besides, they also considered knowledge and use of plant resources of tropical origin which are cultivated and consumed among the people.

As results, there are three key products that are being replaced, such as: local Caita squash (*Cucurbita* spp.) by Italian Zucchini (*Cucurbita* spp.), Milpa melon (*Cucumis melo*) by Chinese melon (*Cucumis melo*). To conclude, we can say that ancient vegetables are less consumed by the current people, resulting in loss of natural heritage.

Vegetables, Southeast of Mexico, Campeche, ancient agriculture

Citation: NIÑO, Naú, BOLÍVAR, Nidelvia and VALENCIA, Marvel. Ancient Vegetables from Campeche between Disuse and Oblivion of the Current Consumer. *ECORFAN Journal*-Republic of Nicaragua 2016, 2-2: 13-19

* Correspondence to Author (email: nsninog@uagro.mx)

† Researcher contributing first author.

Introduction

In Mexico, there is a huge variety of local vegetables among which we can mention: the local zucchini and the cornfield melon which are interspersed with the corn cultivation in order to increase the profitability of the soil that is cultivated by Mexican peasants. However, some vegetables have disappeared due to the lack of usage continuation when people prefer the new selections that are more productive, some of them are isolated and some others require characterization, selection and improvement to identify outstanding features (Villanueva, 2007).

In this essay, we can defend the fact that the plant products of tropical origin growing in Campeche are, all in all, widely distributed in the tropics of the world in a range of altitude that oscillates between 0 and 1200 m, i.e., from the coast to the Highlands, in the majority of cases. So, it aims to integrate the debate in the sense that the price reaching these plant resources is heterogeneous, which means a financial contribution for producers who can sell them. However, it is important to note that processes of marketing of these products, in most cases, are at local and regional level.

The purpose of the investigation has to do with ancient vegetables that are considered, worldwide, exotic fruits of limited use, little available in markets and their consumption (usually) restricted to regional and local markets nationwide. Populations, inhabiting large cities, consume very little and they are usually associated with high income sectors.

Part of the current problem which arises in the extensive marketing of these products is that we face a highly competitive horticultural market. The importance of the research lies in the existence of a factor that strongly determines the marketing of the vegetables of tropical origin.

To address this problem, we should reduce the investment costs by purchasing seeds of different vegetables in the Mexican farmland and particularly in Campeche where there is a sustainable strategy that would impact in a positive way on the production of butternut squash and melon with which the profit margins for the producer would increase (Sánchez *et al*, 2011, Figure 1).

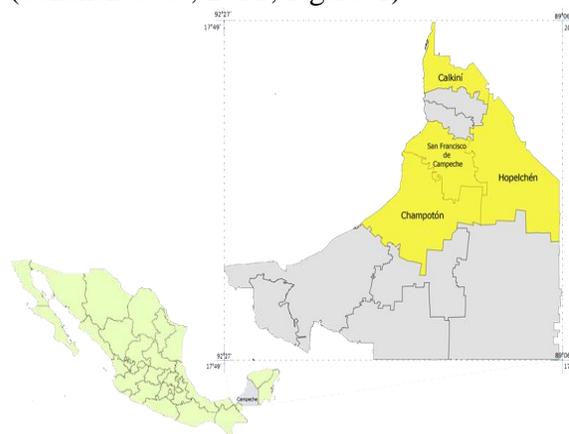


Figure 1 Study area

These vegetables have been cultivated in Campeche since the ancient times for personal consumption as well as corn and bean, they have always been part of people's diet, which could positively improve and complement the nutrition since they are vegetables taking advantage of the consumption of their seeds (Ruelas, Aguilar, García, Valdivia & López 2015: 1846).

Some bibliographic references as (Bolívar, Valencia & Sauri, 2009), expose the lack of opportunities for marketing with the consequent decrease of income associated with such resources as the situation that leads to the opening of the owners of the vegetable producers, to hear new ideas from land to use which usually come from promoters of GM crops; this implies one of the challenges in the conservation of genetic resources of tropical origin, the preservation of the intangible cultural heritage linked to them.

In order to recognize the importance of traditional vegetables and resize its socio-cultural value in Campeche and its people's diet.

There are four sections that integrate this article, these sections are: objectives, methodology, results and conclusions.

Objectives

Among the goals, we consider: *a*) exemplifying the traditional vegetables which are replaced in the diet of the people in Campeche and *b*) synthesizing the consumption of the plant resources that these people have.

Methodology

Firstly, an office work was carried out through consultation of digital and printed literature of topics as a strategy to preserve the natural heritage (Valencia, Bolívar & López, 2013), floral species that became obsolete by future generations (Romero, Valencia, López & Bolívar, 2013) and loss of traditional trees and intangible heritage in the city of San Francisco de Campeche (Bolívar & Valencia, 2014).

Secondly, a work of field was carried out for the achievement of the objectives raised in such way that some face-to-face surveys were also carried out in the four municipalities of the State of Campeche, during the period between September 2011 and February 2015. The applied questionnaires showed, among other results, the following information: full name, address and age of the surveyed.

For the pilot project of the questionnaires a sample of 500 people in four of the eleven municipalities of the State of Campeche was used: Calkiní (100 persons), Campeche (250 persons), Champotón (75 persons) and Hopelchén (75 persons).

In the survey, we asked about the knowledge, use and disuse of the plant resources of tropical origin that are harvested in Campeche. During the questionnaires' process of validation, some images were added as well as and the element called "Forms of Consumption of" (for meals, drinks and desserts), with the format that is shown in Table 1 (Bolívar & Romero, 2007).

Results

The results por example refer to the natural drinks made by vegetables and other fruits in order to contrast them with artificial drinks so that we can demonstrate that consumers in Campeche prefer drinking artificial beverages rather than the natural ones. Finally, a sampling was performed by conglomerates through neighborhoods and municipalities, with an equivalent sample to 10% of the population of each municipality (Saldaña & Niño, 2013). All of this represents an added value regarding other techniques outlined in the existing literature on the subject.

Results obtained on the basis of the elementary and secondary students' knowledge during the 2011-2015 are shown in tables 1 and 2.

Year	2011	2012	2013	2014	2015
Fruits	Grapes	Tangerines	Oranges	Grapes	Oranges
	Strawberries	Grapes	Cantaloupes	Oranges	Apples
	Pears	Oranges	Grapes	Apples	Strawberries
	Apples	Apples	Pineapples	Cantaloupes	Pineapples

Table 1 Level of knowledge of fruits in elementary students Source: Own Elaboration, 2012-2015

Table 1 findings showed that elementary students in the State of Campeche do not know the local fruits.

Therefore, they do not consume them, even though they prefer the temperate and cold ones, such as grapes, and mainly citrus fruits like oranges and tangerines (Romero, Bolívar & Valencia, 2012 así como Correa & Niño, 2008) which is a shame since all physical, intellectual, and even professional development and training process are accompanied by a good state of health where food plays a crucial role.

Year	2011	2012	2013	2014	2015
Fruits	Apples	Pineapples	Strawberries	Apples	Oranges
	Strawberri	Apples	Papayas	Pears	Watermelons
	Pears	Oranges	Grapes	Pineapple	Apples
	Grapes	Tangerine	Oranges	Papayas	Bananas

Table 2 Level of knowledge of fruits in secondary students Source: Own Elaboration, 2012-2015

Table 2 results, sorted by frequency in descending order, show the knowledge of fruits in secondary students in the state of Campeche, they barely know local fruits and consequently their consumption is minimal, so they prefer temperate and cold fruits, such as apples, pineapples, strawberries, and oranges. In this group of students, we found out that they consume the local fruits (papaya, watermelon and banana), although these do not represent the traditional fruits, they grow in Campeche.

The watermelon cultivation in Campeche, Mexico is really important due to its potentiality in the market, as is demanded during all the year by the local consumers. The average sown watermelon area from 2007 to 2012 was of 1,613 ha; t, 80.93% concentrated in the municipalities of Hopelchén and Campeche whose production as a whole was approximately 33,267 a total in the state of 39,955 t, the latter valued of 117,338 pesos (Uzcanga & Ramírez, 2015: 1331).

"Migration from the countryside to the city contributes to the loss of important varieties of vegetables", said Eduardo Benítez, Deputy Representative of FAO in Mexico. He also mentioned: "those products that are consumed are going unnoticed, then... their disappearance is a latent risk. What is not consumed, is not taken care of, and therefore is not preserved" (Rangel, 2016: 50). The results obtained on the basis of the over-40-year-old adults' knowledge during 2011-2015 are represented in tables 4 and 5.

Having analyzed the results, we could notice that unlike most school-children, adults over 40 years old and under 60 years old, still prefer and consume local products, as demonstrated in 2011 with fruits like mamey-papaya, chi-abal plum and sapodilla; in 2012 the cornfield melon, the cantaloupe and the watermelon, and in third place the orange; in 2013 the first two places were occupied by the citrus fruits, in third place the chi-abal plum, in 2014 and 2015 the coconut in third place, noting that the Zapotaceas: tauch and sapodilla were not preferred by people in 2013, 2014 and 2015, which was interpreted as a lack of knowledge of these fruit trees.

The mamey (*Pouteria sapota*) is, today, one of the "fine" fruits that is consumed in various parts of the tropics and is used by the food industry in the manufacture of ice cream and cakes (Linares & Bye, 2015: 55).

Others results observed were: that adults over 60 years old still prefer and consume local products, the most important ones were: in 2011 mamey-papaya, chi-abal plum and sapodilla; in 2012: manila-mango, sapodilla and chi-abal plum in third place; in 2013: sapodilla, redcurrant, chi-abal in third place; in 2014: nance, soursop and coconut; in 2015: pitahaya, mamey, and soursop in third place, observing that adults prefer the region fruits.

To our certain knowledge, these products are widely regarded as their natural heritage. We, particularly, pointed out that the sapodilla (*Manilkhara sapota*) is extraordinary, it contains an edible fruit prized for its sweetness and delicious flavor. The Mayans knew and extracted its latex, named "sícte", which is the Mayan term for chewing gum, it was the base of the chicle industry for many years. Nowadays, in the international chewing gum industry, this substance has been replaced by artificial polymers and only the local handcraft industry keeps using it as organic chewing gum, of great value to connoisseurs as a product that supports the conservation of rainforests in our country (Linares & Bye, 2015: 56).

Traditional cuisine has, throughout history, been made up anonymously by women whose stews, tastes and smells have made it survive until our days. Honor to women for being initiators and preserving the cultural heritage of Mexico's gastronomy (Rodríguez & Niño, 2013: 133).

These are the results obtained according to adolescents and adults' preferences of desserts during 2011-2015, (see Table 3).

*f	Kinds of bread	*f	Cold desserts	*f	Traditions
2	Cake	2	The Mashed candies	3	Sweet
1	Cheese pie	1	Ice cream	2	Plum
1	Upside down le cake	1	Gelatin	2	Pumpkin
2	Doughnuts	8	Crème caramel	1	Sweet andy
1	Vol-au-vents	4	Strawberries & cream	1	Yucca
1	French toast	1	Yogurt & banana	8	Liquor- nce
1	Corn cake	1	Condensed milk candy	6	Marzipan
	Cherry cake	3	Chocolate cream	6	Meringue
	Honey pudding		s covered with chocolate		coconuts
					nut candies

Table 3 Level of preference for desserts in adolescents and adults, with frequencies Source: Own Elaboration, 2011-2015. * f = frequency of consumption

Table 3 results show higher frequencies in different flavored cakes. The first one with 30% is chocolate cake, and 28% three-milk cake; the following is coconut cake with 10% and cheese cake with 5%; the Mashed candies in different flavors, as well as ice cream and pies; the low frequency-traditional sweets are highlighted which were also associated with specific events; for instance, pumpkin candies, yuccas and little coconuts were associated with the celebration of the day of the dead; sweet potato candies, marzipans, coconut candies and meringues are linked to "Holy Child" Novena held in the months of January and February; the plum candy and the liquor-filled Nance candy are related to the tourism and usually consumed when there are visitors. This shows a lack of knowledge (intangible heritage) of traditional desserts (candies), which may disappear in the next generations if we keep the current trend of consumers in the four hearty municipalities of Campeche.

Others results were that the drinks that adolescents and adults preferred during 2011-2015, you can see in the Table 4.

*f	Traditional Drinks	*f	Artificial Drinks	*f	Fizzy Drinks
33	Pozol	1	Nestea (tea)	4	Cokes
20	New Cornflour	5	Fresky Bon	4	Sodas
14	Tepache	4	Zuco		CHOCOLATE
	NATURAL R	4	Tang	4	Soldadito Soldier)
400	Orange &	3	Hibiscus Flower	3	Bevi
223	Melon, a, cashew				TEA
	WATER	2	Be Light Fruit ink	2	Reca
35	Purified water	1	Frisco	4	Nestea
9	Rain water			3	Arizona

Table 4 Level of preferences for drinks in adolescents and adults, with frequencies Source: Own Elaboration, 2011-2015. * f = frequency of consumption

Table 4 results allow us to conclude that: *i)* traditional beverages are now in disuse; *ii)* the fresh fruit waters of the region were preferred by most consumers; *iii)* soft drinks are in a privileged place as the preferred beverages, as are located above the consumption of fresh water by 25%; *iv)* regarding teas, local tea has a high frequency and *v)* rain water is also in disuse as water for human consumption. This information shows a clear loss of traditions linked to the beverages consumed by people from Campeche. Due to this, farmers, who were always the generators of the agro-biodiversity, now prefer planting more profitable fruit and horticultural products rather than letting traditional crops be marginalized (Rangel, 2016).

Conclusions

In general, Campeche's younger population is unaware of many local natural resources and does not consume traditional food, which means losing of intangible heritage that converges to the loss of natural heritage.

It is necessary to inform the future generations about the natural resources and ways of using them, so that they can gain knowledge, as development prospects should steer towards the consumption of local products in order to contribute to biodiversity conservation, reduce the consumption of fossil fuels, give an added value to the work of the peasant and rescue the culinary traditions.

With this study, we managed to statistically know that in the four municipalities of Campeche, the current consumers prefer to include Italian Grey Zucchini in their diet instead of the caita Zucchini and the traditional cornfield melon was replaced by the cantaloupe.

References

- Bolívar-Fernández, N. y Romero-González, G. (2007). Campeche desusos y costumbres. San Francisco de Campeche: Universidad Autónoma de Campeche.
- Bolívar-Fernández, N.; Valencia-Gutiérrez, M. y Sauri-Duch, E. (2009). Recursos fitogenéticos de origen tropical su contenido de micronutrientes. San Francisco de Campeche: Universidad Autónoma de Campeche.
- Bolívar-Fernández, N y Valencia-Gutiérrez, M. (2014). "Pérdida de árboles tradicionales y patrimonio intangible en la ciudad de San Francisco de Campeche". En Niño-Gutiérrez, N. S. y Saldaña-Almazán, J. (coords.). Comunicación Social del desarrollo y biodiversidad (205-213). México, D. F.: Editorial Eón-UAGro.
- Correa-Pérez, G. y Niño-Gutiérrez, N. S. (2008). "Desarrollo rural ¿Con deforestación y escasez de leña y carbón vegetal?". En Niño Gutiérrez, N.S.; Sampedro, L.; Rueda, R. y Rodríguez, A. (coords.). Antología de Estudios Territoriales. El Fomento de los Estudios Territoriales en Iberoamérica. La Habana: Editorial GEOTECH.
- González-Durán, E.; Espinosa-Garduño, M.; Valencia-Gutiérrez, M. y Tzel-Padilla, R. (2013). "Turismo alternativo en comunidades rurales aledañas a la Biosfera de los Petenes, Campeche". En Niño-Gutiérrez, N. S., Saldaña-Almazán, J. y Bolívar-Fernández, M. del J. (coords.). Patrimonio, Comunicación Social y Sustentabilidad (67-94). México, D. F.: Editorial Praxis-UAGro.

- Jiménez, P.; Hernández, M.; Espinosa, G. Mendoza, G. y Torrijos, M. (2015). Los saberes en medicina tradicional y su contribución al desarrollo rural: estudio de caso Región Totonaca, Veracruz. En *Revista Mexicana de Ciencias Agrícolas* 6(8): 1791-1805.
- Linares, E. y Bye, R. (2015). Flora que ha aportado México al mundo. En *Arqueología mexicana*, 130 (1):52-59.
- Rangel, S. (2016). Alternativas para enfrentar la crisis alimentaria. El gran desafío mundial. En *Muy interesante* 5(1): 44-55.
- Rodríguez-Rodríguez, M. y Niño-Gutiérrez, N.S. (2013). “La gastronomía típica mexicana como patrimonio cultural”. En Niño-Gutiérrez, N. S., Saldaña-Almazán, J. y Bolívar-Fernández, M. del J. (coords.). *Patrimonio, Comunicación Social y Sustentabilidad* (121-136). México, D.F.: Editorial Praxis-UAGro.
- Romero-González, G.; Bolívar-Fernández, N. del J. y Valencia-Gutiérrez, M. (2012). *Campeche: Desusos y Contumbres II. Recursos Florísticos Tropicales*. Munich: Editorial Académica Española.
- Romero-González, G.; Valencia-Gutiérrez, M.; López Méndez, M. R. & Bolívar Fernández, N. J. (2013). “Especies florísticas menores en desuso por las nuevas generaciones” en Niño-Gutiérrez, N. S., Saldaña-Almazán, J. y Bolívar-Fernández, M. del J. (coords.). *Patrimonio, Comunicación Social y Sustentabilidad* (95-119). México, D.F.: Editorial Praxis-UAGro.
- Ruelas-Hernández, P. G.; Aguilar Castillo, J. A.; García Robles, J. D.; Valdivia Bernal, R. y López Guzmán, G. G. (2015). Diversidad morfológica de especies cultivadas de calabaza (*Cucurbita* spp.) en el estado de Nayarit. En *Revista Mexicana de Ciencias Agrícolas* 6(8): 1845-1856. Recuperado de <http://www.redalyc.org/articulo.oa?id=263142750012>.
- Saldaña-Almazán, J. y Niño-Gutiérrez, N. S. (2013). “Comunicación social de los modelos de planeación en el patrimonio natural”. En Niño-Gutiérrez, N. S.; Saldaña-Almazán, J. y Bolívar-Fernández, N. del J. (coords.). *Patrimonio, Comunicación Social y Sustentabilidad* (7-21). México, D.F.: Editorial Praxis-UAGro.
- Sánchez-Hernández, C; Villanueva-Verduzco, C.; Sahagún-Castellanos; J; Martínez-Solís, J.; Legaria-Solano, J. P. y Sánchez-Hernández, M. A. (2011). Efectos de la aptitud combinatoria en híbridos de calabacita tipo Grey Zucchini. En *Revista Chapingo Serie Horticultura* 17(2):89-103. Recuperado de <http://www.redalyc.org/articulo.oa?id=60920970002>.
- Uzcanga, N.; Cano, A. y Ramírez, J. (2015). Diagnóstico socioeconómico de sandía en el estado de Campeche, México. En *Revista Mexicana de Ciencias Agrícolas* 6(6):1331-1344.
- Valencia-Gutiérrez, M.; Bolívar-Fernández, N. y López-Méndez, M. (2013). “Consumo de Recursos Locales como estrategia para conservar el patrimonio natural” en Niño-Gutiérrez, N. S.; Saldaña-Almazán, J. y Bolívar-Fernández, N. del J. (coords.). *Patrimonio, Comunicación Social y Sustentabilidad* (43-66). México, D.F.: Editorial Praxis-UAGro.
- Vargas, L. A. (2015). Recursos para la alimentación aportados por México al mundo. En *Arqueología mexicana*, 130 (1):36-45.
- Villanueva, V. C. (2007). *Calabaza cultivada. Identificación de especies, caracterización y descripción varietal*. Texcoco: Universidad Autónoma Chapingo.

Freedom and education in postmodernism

GARCÍA-GONZÁLEZ, Alejandro†*

Received January 7, 2016; Accepted June 15, 2016

Abstract

The objective of the current article is to show the results of a research done about the social representations of freedom in students of junior high school from Querétaro. The results are used as a base for a pedagogical proposal founded on the transcendent freedom in postmodern society. The research was descriptive-sectional qualitative. Phenomenological, hermeneutical and pedagogic methods were used, as the focus groups technique and observation in situ for request data, analyse them, discuss them, and pose a pedagogical proposal. The data were the practical, ideas and feelings that junior high school students live around the idea of freedom. I found three social representations of freedom: the transcendent sense, the postmodern, and the based on the submission. There are weak modifiers elements which represent the possibility of building ways of relate with others, as a base for the constructions of a more humanized, beautiful and happy society. I propose a “must be” based on the transcendent sense of freedom. It serves as an end to the formative actions of the educator, as wise craftsman, to help his/her students to give a new meaning to their existence and to have aesthetic experiences to rethink the world from a non-postmodern perspective.

Freedom, social representation, education, postmodernity, knowledge

Citation: GARCÍA-GONZÁLEZ, Alejandro. Freedom and education in postmodernism. ECORFAN Journal- Republic of Nicaragua 2016, 2-2: 20-46

* Correspondence to Author (email: alejandro.garcia@uaq.mx)

† Researcher contributing first author.

Introduction

The present research is a study of social representations on freedom of secondary students. The interest in the subject has been awakened from observations made in my teaching practice at this educational level. It observes many facets in which my students objectivate freedom, hence the question arises: what are the social representations of freedom of students? I have found that, on many occasions, the idea of community is subsumed in an individualism which presupposes a distancing from the idea of polis in the Greek sense, that is, the aspirations and desires of the students are directed to fulfill the particular requirements, leaving aside the idea to build a common project.

A situation that is presented in a constant way is the so-called "bandwagon effect", that is, a political act without a what, a why or a how. It is a way of driving in which the law predominates of the clear reasons why it is acted on, only follows the current of some kind that has acceptance and leadership in front of the group. More often than not, leadership is based on the popularity it has in school, fashion, age, or even physical things that make a peer's judgment desirable. It is, therefore, an act without meaning, without freedom.

I understand by acting meaningfully political, the individual and group actions that maintain directed to maintain a harmony and to pursue the common aims between the members of the social group. Making a team work involves reaching certain agreements; Sometimes I observe that when establishing these patterns of political coexistence to carry out the activity as a team, participation is almost nil, there are no proposals, there is no discord, no dialogue (yes a lot of talk). When a member proposes a form of work, it is generally accepted by others.

Dialogue means finding meaning in establishing consensus; Possibility of freedom of expression and, in addition, a construction of the community to confront different positions, establishing a dialogical relationship.

This situation is problematic because it results in multifaceted citizens who have freedom by living tied to a catalog of postmodern offers. Political action lacking consensus is a problem, among other reasons, because when reaching adulthood, probably decisions such as who am I going to vote for?, what will I study ?, what is my life project? What I am going to contribute to my community?, are taken on the basis of the same political action and, therefore, have no foundation.

Summary the conclusions of the description of ways to represent freedom in the following statements, which are the genesis of research: (a) is sold, as an object of consumption, a freedom based on postmodern culture, (b) there are different representations (C) presume that formal education does little or nothing to educate the practices, ideas, and feelings of our students in a freedom different from the postmodern one.

The description allows us to assume that freedom takes on many facets. Likewise, it allows to indicate that there are offers, mainly of means of communication that, being in possibility to choose them, it seems that the individual enjoys freedom. However, I consider that such freedom - which I will call postmodern - is far from being a watershed for a democratic and harmonious society, since it directs the subject to a solitary search for personal progress. With the present research, I intend to develop a pedagogical principle that supposes the formation of a free citizen - non-postmodern freedom - autonomous and conscious of its historical-social reality.

In the present study I analyzed the concept of freedom with support in philosophy, social psychology and pedagogy, based on a methodology of a complex way of thinking. I studied - based on focus groups and in situ observation - social representations on the freedom of secondary level students. Based on the data collected and its analysis, I find that there are three social representations about freedom in the students studied, namely, freedom in the transcendent sense, freedom in the postmodern sense and freedom based on submission. The obtained results allow to affirm that there are weak modifying elements that represent the possibility of constructing forms of relation with the other, that are the base for the construction of a different society, more human, more beautiful and happier. From the results of the empirical study, I propose a duty to be based on the transcendent meaning of freedom. The pedagogy that I propose is a proposal of the educator as a craftsman who has the wisdom to help his students re-signify their existence in a transcendent sense and, with it, have aesthetic experiences that allow re-thinking the world from a non-postmodern perspective.

Social representations

Serge Moscovici (Mora, 2002) pointed out that social representations (SRs) are a set of knowledge through which reality becomes intelligible. "... the field of representation designates common-sense knowledge" (Mora, 2002, p.7). In other words, human beings apprehend a knowledge emanated from common sense and, through it, we know and interpret reality.

The concept of social representation, according to Jodelet (1986), has two dimensions: the psychological and the social, because the mental activity that subjects and groups perform when they mean an object.

From this activity comes the so-called knowledge of common sense. It is, therefore, a psychological and social elaboration of the real.

Knowing RrSs allows us to unravel the knowledge that seems chaotic, taking into account that harmony and disharmony represent an indissoluble conjunction of complex reality. Thus, in its complexity, it is how I approached the investigated reality, avoiding to simplify, with disjunctives, what of its own is complex and complementary.

Only from the recognition of reality in its complex character can we hope that the pedagogical approach can be anchored in the thinking of secondary school students and teachers as well as materialized in plans and programs of study that are not limited to being an encyclopaedia. That teachers must transmit and move from the teacher's book to the student's.

Moscovici wrote about the "universes of opinion", in other words, the dimensions of social representation, in this respect he pointed out three universes of opinion (Mora, 2002):

Information: understood as the set of knowledge that a social group has in relation to a particular topic.

The field of representation: refers to the "organization of the content of representation in a hierarchical way" (Mora, 2002, p.10). By being variable, it allows to distinguish different levels of organization. Herzlich referred in (Mora, 2002) pointed out that the ideological aspects must be taken into account.

The attitude: people take sides - favorable or unfavorable - regarding an object of representation and this is part of the genesis and use of a social representation.

Moscovici referred to the dynamics of a social representation, in this respect Mora (2002) pointed out that this dynamics can be schematized in the following aspects:

Objectivation: this aspect is observed in three levels that constitute it: (a) selection and decontextualization of the elements: the people select elements for the understanding of a phenomenon. In addition, such selection is made by decontextualizing the reality to which these elements respond, (b) formation of the figurative nucleus: arises from the selection of information and is the sustenance of the beliefs of those who are part of a social group and (c) **Naturalization:** at this moment, social representation becomes generalized and accepted naturally, as if it were a product of science, even when it is common sense.

The process of objectification is to appropriate a set of meanings materializing them. It is the property of materializing the word, making concrete the abstract. Thus, the selection of information is based on cultural and normative criteria that will form - sometimes indiscriminately - the figurative nucleus (Jodelet, 1986).

Anchoring: here the representation is incorporated into the pre-existing value system in society. In such a way that is taken for real and scientific emanated from common sense and not proven true.

When we speak of social representations, we generally start from other premises. First, we consider that there is no gap between the outer universe and the universe of the individual ... For example, the definition of psychoanalysis or the role of psychoanalyst depends on the attitude towards psychoanalysis and the experience inherent to the author of the definition (Moscovici, 1979, p.5).

The anchor, in dialectic relation to objectification, "articulates the three basic functions of representation: cognitive function of integration of novelty, function of interpretation of reality and function of orientation of behaviors and social relations" (Jodelet, 1986, 286). In such a way that the processes of objectivation and anchoring are constituted as the generators of RrSs, leaving aside the simplistic notion of input / output.

Postmodernity

Scott Lash postulated that postmodernization is a process of de-differentiation (1997, p.29). Postmodernity, following Lash, is a condition in which it is difficult to refer to distinction. There is an equalization of practices, feelings, ideas and products, in which everything seems admissible. It is a kind of relativism with a weak identity with respect to diverse ethical, aesthetic and political values. The barriers between the beautiful and the grotesque, the good and the bad, the democracy and the anarchy were broken; Valuation depends on the subject acting on the basis of common sense.

Giovanni Sartori (2001) postulated the metamorphosis of homo sapiens in homo videns, that is, the supremacy of the image above the thought. The place of knowledge is occupied by the opinion emanated from the action of seeing - mainly television - The previous thing derived from the boom that has had the TV, to such a degree that displaced to other means of communication like the newspaper. The author emphasized that the problem of TV overvaluation is that the image is privileged above the arguments and, with this, the man loses his capacity for abstraction; In Sartori's words, the verb see surpasses the verb to understand (Sartori, 2001, 40).

Plausible is Galeano's (1998) notion when he stated that, in an ideal society, "the television will cease to be the most important member of the family, and will be treated as the iron or the washing machine" (Galeano, 1998, p.).

When the capacity for abstraction is lost, the man is left empty of knowledge. We live in the kingdom of the doxa. The problem of living opinion and common sense is that the most important decisions of the polis are taken, too, from unsupported opinions. What is more, said Sartori (2001), it seems that a small group of media owners are the ones who decide public opinion, stripping man of his freedom of thought. Technology, pretending to improve and facilitate the life of its inventor, has become its enemy, fragmented it, left it empty, incapable of thinking for itself; This is the postmodern man, seduced by ephemeral offerings and void of meaning.

Lipovetsky (2010) postulated that postmodernity is characterized by a continuous seduction that replaces coercion by communication, prohibition by pleasure and anonymity by custom (Lipovetsky, 2010, p.17).

Lipovetsky's (2010) approach allows us to make an analogy with the postmodern catalog for the above-mentioned happiness. I deem it necessary to deconstruct this catalog in order to understand it and to be pertinent in the transcendent pedagogical aim that it offers. Postmodernity, then, I conceive of as a way of confronting the meaningless world - endowed with a pseudo sense - emanated from the media that are controlled by those who own the means of production and impose on the school a certain type of man to form, that is to say, they foment a postmodern identity.

Education

Durkheim pointed out that the teacher: "He is not faced with a shallow table on which he can build what he pleases, but in the face of existing realities, which he can neither create nor destroy, nor transform at his pleasure" (Durkheim 2009, 43).

In this sense, I affirm that in our time teachers are faced with a hybrid reality of which we are not alien; for this reason, following Durkheim (2009) before attempting to create, transform or destroy a priori, it is necessary, first, to understand the condition in which we and the students are.

There is a collective consciousness composed of practical feelings and ideas that society seeks to instill in its members as it passes through the school. Society is immersed in the postmodern condition. It shows attitudes as business efficiency-greater benefit to the company regardless of the condition of the worker- In this context make sense the school practices described above. It is, therefore, a sign that education is immersed in a complex reality.

It is not that education lacks values - an assertion that many are struggling to defend - is that the values that are lived in our society are immersed, like this one, in the postmodern condition. "There is no people where there is not a certain number of ideas, feelings and practices that education must instill in all children, regardless of the social category to which they belong" (Durkheim, 2009: 46). Perhaps the Mexican education of the mid-twentieth century to the present day has been concerned with educating practices and ideas, despising the sentimental value of being human, necessary to give meaning to revolutionary and transformative ideas.

Paulo Freire (2005) posed two fundamental types of education: (a) banking education and (b) problematizing education. As regards the former, it implies a transmission of knowledge mechanically. The teacher takes the role of wise banker who gives the ignorant pupils symbolic goods for their training. "In the" banking "view of education," knowledge, knowledge, is a gift from those who judge themselves wise to those who judge them ignorant" (Freire, 2005: 79). In this regard, it is appropriate to say that this vision is not a sign of freedom, but rather it is of submission.

Problem-forming education implies a vision of the teacher as an educator-educator and of the student as an educator-educator. Therefore, an intrinsic relation educator-educating-educator is established. The means by which problematizing education is possible is dialogue:

Problem-forming education, of course, precedes the requirement of overcoming the educator-student contradiction. Without it, the dialogical relationship, indispensable to the cognoscibility of cognitive subjects, is not possible around the same cognizable object (Freire, 2005, p.91).

Freire therefore points to dialogue as a possibility of emancipation from the condition of the oppressed who have educators and educators. There is no primacy of either side but a dialogical relationship. The emancipation that Freire suggested is of the material type, that is to say, theory and practice play a fundamental role in this: "Education as a practice of freedom ... implies the negation of the abstract, isolated, detached man, detached from the world, as well as Denial of the world as a reality absent from men "(Freire, 2005, p.

As Marx pointed out in the General Introduction to the critique of political economy by postulating that to believe in the abstract man of Smith and Ricardo is to believe in Robinsonadas (Marx 1989: 33).

Freire pointed out that dialogue is an existential requirement that allows the creation of the world, so that it is not proper to conquer the other, but to build with the other (Freire, 2005: 108). One of the conditions Freire (2005) posited for the dialogue to be possible is love, understood as the commitment, particularly, to the oppressed. The above allows us to affirm that the utopia of a transcendent exercise of freedom from an education that has as pedagogical principle a freedom attached to universal values, will only be possible through an act of love.

The aim of the pedagogy proposed by Freire is to seek to be more, which is, the development and growth of the human being aware of his historical reality and determined to transform the society that has been inherited. The attainment, or even the hope that it is attainable to be more, is only possible, following Freire, if we place community above selfishness: "... this quest for being more can not be achieved in isolation, in individualism, but in the communion, in the solidarity of those who exist, and hence impossible in the antagonistic relations between oppressors and the oppressed "(Freire, 2005: 100).

Freedom

Kierkegaard (2014) in the theorizing on the existence of the man raised that the life of this one takes place in the transition of three stages (aesthetic, ethical and religious); The aesthetic is that of Don Juan, that is, the man who seeks pleasure for a moment and then seeks the different;

The ethical is the stage of boredom, it is materialized in marriage, which implies, in many cases, the acquisition of a commitment that leads to the routine (Kierkegaard, 2014).

In the ethical stage human freedom seems impossible, since if we are immersed in a world founded on boredom and routine activities, then submission and conformism take the place of freedom. In the religious stage "whoever has learned to anguish in due form, has reached the supreme knowledge ... Anxiety is the possibility of freedom. Only this anguish, along with faith, is absolutely educative" (Kierkegaard, 2006, pp. 181-182). I synthesize the religious stage as the recognition of the possibility of infinity through the anguish that produces the recognition of one's own finitude and the immensity of God.

"Lies that virtue is nested in the suffering, pious and obedient spirits!" (Flores, 1987, p.179). I believe, therefore, that attaining virtue, in this case freedom, is not related to following the norms, in the words of Ricardo Flores Magón, in being obedient. Based on the above, I can make an analogy with social representations and conclude that in order to reach a thought and an action outside the postmodern condition it is necessary to rebel against some of the pre-established school-social norms. In reference to Kierkegaard, it implies transcending the ethical stage founded on the fulfillment of morality and entering a transcendent religious stage, characterized by the anguish that produces the magnificence of God and yet, through faith, leads us to the stage Superior of the human being, that is, to the religious stage.

By basing its existence on pure theory, there is the risk of falling into false advocations of freedom and seeming to move further away from its practical realization.

Paulo Freire pointed out that theory without practice leads to chatter, whereas a practice if theory leads to activism (Freire, 1997). Hence, following Freire, it is necessary to establish dialogic relations (understood as the possibility of harmony from chaos) in which theory and practice complement each other.

The theory, as Freire (1997) pointed out, is of little use if it is not consubstantial with praxis. Pretending to attain liberty based only on the intellect may even be very risky, since it leads to a pure metaphysics; and with this it is impossible to account for a concrete situation and, even worse, justifies the daily walk of man in a chimera or an ideal world.

Jean Paul Sartre (1998) postulated, in Existentialism is a humanism, that existence precedes the essence. This approach compels the reference to the beginnings of Western philosophy, to the ancient Greek parents and especially to Plato to seek the beginnings of the premise contrary to the approach of French, namely, the essence precedes the existence.

The Platonic approach indicates that in the soul of each there is the power to learn and the organ for it, and that, just as the eye can not turn to light and leave the darkness if the whole body does not turn, so there are To turn from what has genesis with the whole soul, until it becomes able to bear the contemplation of what is, and the most luminous of what is, which is what we call the Good (Plato, 1986, pp. 343-344).

Plato in Book VII of the Republic, raised the myth of the cavern, where he revealed the existence of ideas as the foundation of our sensitive world, in other words, ideas precede and are the substrate of everything that exists worldly, that is, the essence precedes existence.

It is, perhaps, to recognize the existence of an educational ideal, adding that this is not something given a priori or existing beyond our reality, but built in the day to day, based on the historicity of the human being.

In Sartre's (1998) conception, if truth is only material reality, it is not possible to justify it in metaphysical assumptions, since man, in objective terms, is thrown into this world; Hence the existence can only justify itself and the essence is forged from it. In other words, we first exist in this world and, from the decisions we make, we constitute our essence; we form, returning Freire (2005) to be more, an action that at the same time, gives meaning to the educational practices that I will postulate in the pedagogical proposal. It is important to emphasize that forming, in the sense postulated by Freire (2005), I understand it as an ontological position that places us in front of the question about the meaning of our own existence.

Man, as conceived by the French existentialist, if it is not definable, is because it begins by being nothing. It will only be later, and it will be as it has been done. Thus, there is no human nature, because there is no God to conceive it (Sartre, 1998, p.12). Freedom, Sartre postulated, represents one of the highest aspirations of the human being, and yet it is inherent in man; Since in giving to the latter all responsibility for his actions and, therefore, what he himself becomes, he also assigns the capacity for free decision, that is, freedom is the thread from which the human being Forms its essence, taking into account that this is only possible having as a principle the existence. Having a commitment of such magnitude forces man to engage, with free acts, the whole of humanity.

Liberty seems to remain in speculation; The man suspects that there is something called freedom but he has not been able to fully account for it in praxis, he has limited himself to make assertions that more or less conform to his daily walk and, worse, trying to justify it theoretically, Fell into a vicious circle, because the self as a free subject, choose and with his choice compromises all humanity, but his choice must be based on the decision of another who also committed humanity and, therefore, the self. Where is the freedom of the individual, perhaps in the choice of others, then what is the freedom that supposedly owns the subject?

Identity

It is important to bear in mind that in the exercise of teaching it is desirable to educate practices, ideas and feelings of freedom. I believe that the process of identification is more linked to feelings than to practices and ideas. In other words, I presume that when a person's feelings are moved, it is more likely that there will be a process of identification that will subsequently result in ideas and practices.

To suppose that I can put forward a pedagogical aim whose sustenance is freedom - as practice, feeling and idea - without knowing what are the nuclei of identity that my students have with respect to the notion of freedom, is to suppose that, a priori, I can have the Of right guessing. It is to believe that only by ideas can a new identity be generated that will enable a new, more dignified society.

It is important to emphasize that I proceed on the basis that society is not static. It is in a constant historical development that suggests that identity is changing as well. For this reason it is not relevant to propose a pedagogical purpose without taking into account the current circumstances.

Although it is necessary to recover the history of society to understand the present, it is not possible to recover transcendent ends without reflection and contextualization; I run the risk of falling into an absolutism, as if this gave an answer and solution to the problems of our time. In this regard, Rosa Nidia Buenfil (1994) pointed out that "social identities are conceptualized as precarious articulations of multiple poles of identification relatively stable but never completely fixed" (Buenfil, 1994, p.15).

Carmela Güemes wrote about the symbolic matrix. He referred that it is a set of meanings that are the basis of the activities, behaviors, thoughts, feelings and judgments that teachers make in their daily actions (Güemes, 2003, 74). One of the purposes of the research was to describe the social representations that constitute the symbolic matrix that generates identity among my students in relation to the notion of freedom.

The broader concept, following Güemes, is culture; this is constituted of diverse symbolic matrices that in turn are conformed by social representations. The latter emanate from the common sense that generates, in many cases, an unreflective reproduction. It is the task of the social scientist to evidence and describe the contradictions that exist in common sense in order to give meaning to human action. It is, therefore, a question of constructing, rather than of reproducing, from the knowledge of symbolic matrices and their RrSs.

The great projects of social transformation, Friedman wrote, were replaced by the search for roots and identity within a framework of cynical postmodernism (Friedman, 2001, pp. 115-116). In other words, the sense that people gave to culture became nonsense; the fragmented identity no longer inspires great nationalist struggles or social transformation.

Now, it is more about finding meaning in culture, which means understanding and appropriating it through a process of identity.

Why should the company make sense to transform society? And how is culture and identity important in that purpose? I estimate that becoming aware of what the springs are – Nuclei of identity - that impel the human being to act in the postmodern condition allows the subject itself to account for its contradictions. In other words, there are weak modifying elements, capable of being described from the RrSs, which allow to recover elements of the postmodern vision to pose a non-postmodern vision of education.

José Lorenzo Tomé, in his text on moral and political identities in the work of Jürgen Habermas, pointed out that the latter proposed to understand society as a world of life and system (Tomé, 2004, 53). Using the terms of Rosa Nidia Buenfil, it is an antagonism: "a bond established between two subjectivities that deny each other" (Buenfil, 1994, p.19).

The system refers to a form of organization where the subjectivity of the person is formed by the postmodern daily life. In other words, effectiveness is privileged over aesthetic enjoyment. It is difficult to think that freedom as a transcendent pedagogical aim can be posed from the system world. However, since this is one of the many facets of postmodernism, it is necessary to understand, following Güemes (2003), the symbolic matrix that supports the system world.

The practices, feelings and ideas I described above, are generally framed in the system world. It becomes an individualistic system in which each subject seeks their own well-being through the satisfaction of needs created by the same system -consumismo- and not through aesthetic enjoyment and re-creation of an ideal world.

The world of life, according to Habermas, cited by Tomé, "is, as it were, the transcendental place in which the speaker and the listener come together ... and in which they can criticize and exhibit the foundations of those pretensions. Validity, resolve their dissent and reach an agreement" (Tomé, 2004, p.54). He further adds: "... the integration of society is not only done through action oriented towards understanding, but also under functional impositions" (Tomé, 2004, p.57).

Heidegger, in his text *Identity and Difference*, stated that "Being is determined, from an identity, as a feature of it. On the contrary, the later thought of metaphysics is represented as a feature of being" (Heidegger, 1988, p.).

Heidegger's ontological proposal suggests that *Ereignis* is a state in which man, through his disposition, is open to being and allows passage to the composition. This last one I understand as the possibility of taking the imaginary to the real, in terms of Buenfil (1994) or to move from the system to the world of life in terms of Habermas (referred to by Tomé 2004).

Finally, in relation to the concept of identity, I use the terms "weak modifying elements" and "good sense nuclei". The first term is taken from Augusto Comte's course of positive philosophy, this refers to elements in reality that, despite their weakness, allow to modify reality itself. That is, vestiges that utopia is possible to the extent that we can recover these elements to generate new nuclei of identity, in this case, based on freedom in the transcendent sense (Comte, 2004, p.74).

In relation to the concept of nuclei of good sense postulated by Antonio Gramsci (1999) in the *Notebooks of the jail*, these nuclei are healthy elements of common sense, that is to say.

They are nuclei that allow to modify the reality for the sake of the construction, perhaps, of a society more just, more human, more beautiful and happier. In this respect Gramsci pointed out that "philosophy is the criticism and the overcoming of religion and common sense, and thus it coincides with" good sense", which contrasts with common sense" (Gramsci 1999: 366).

Methodology

The research objective that directed the work was to describe social representations that have high school students about freedom; for this a route was used from the complexity. It is desirable to recognize that reality is complex, does not manifest itself in an ideal or pure form, rather, it is shown through contradictions that make it difficult to "box" it into a theory that is the panacea of knowledge. However, I used qualitative research techniques but I recognize that reality can not be grouped as qualitative or quantitative, but rather complex, requiring the researcher's ability to analyze the results obtained.

Research methods were phenomenology and hermeneutics. Lambert pointed out that phenomenology is "the theory of appearance, the foundation of all empirical knowledge" (Ferrater 1999: 1238). I used the phenomenological method when I searched for social representations of my students through focus groups and in situ observation.

Phenomenology studies realities whose essence depends on the way in which it is lived. The end of phenomenology, according to Husserl referred to in Martínez (2004), is to discover in the phenomenon universally valid and scientifically useful essences (Martínez, 2004, p. In this sense, phenomenology is a rigorous inquiry and description that does not pretend to reproduce the knowledge of common sense, but to study it to find scientific truths.

It is the study of the realities lived by the investigated subjects without trying to enter in that reality, but respecting the ways in which the subjects live that reality. (Martínez, 2004).

The complexity of reality, referred to above, exhorts to give special value to the empirical data as a source of knowledge. I mean not to overestimate theory over the empirical, but to establish a dialogical practical-theory relationship, going from one to the other, intermingling, to find the essential in the practices, feelings and ideas shed by students.

As regards hermeneutics, Dilthey, referred to by Martínez (2004), affirmed that not only texts but every expression of human life is the object of hermeneutic exercise. I used the hermeneutical method when analyzing data collected through focus groups and in situ observation of practices, feelings and ideas of freedom to describe and interpret some ways in which students objectivate said concept, that is, the social representations about freedom they have.

In relation to pedagogy, this poses transcendent ends that education adopts. In this respect Ferrater postulated that "the problem of the ends of education is usually considered as a philosophical question" (Ferrater, 1999, p.971). He also pointed out that the philosophy of education is distinguished from pedagogy insofar as the latter is linked to methods and procedures. (Ferrater, 1999).

Edgar Morin (2008), in his Introduction to Complex Thinking, pointed out that we live in what he called blind intelligence; it is so because there is a tendency to disjunction, reduction and abstraction. This has resulted in a simplifying thinking that tries to explain social phenomena from a cause-effect logic, without paying attention to the processes that occur in these phenomena.

A paradigm is constituted, in Morin's words, "by a certain type of extremely strong logical relationship between master notions, key notions, key principles" (Morin, 2008, p.89). These notions permeate the discourses that govern social life and science. The principle of simplicity operates by separating what is linked or unifying what is diverse. Science sought to establish itself as the panacea that unveiled the simplicity that was hidden behind multiplicity (Morin, 2008: 89).

The paradigm of simplicity became universal due to the almost generalized rejection of chaos as the genesis of harmony. The chaos in the society proved despicable and, therefore, little deepened to establish it as necessary to reach a certain type of harmony. In this regard Morin pointed out "... the universe begins as a disintegration, and is disintegrating as it is organized" (Morin, 2008, p. 93). Hence, by making a similar relation, the empirical reality described in the approach of the problem and the data found in the research, are chaos and, therefore, it is hopeful to become harmonious if we face the problem in its complexity.

In other words, postmodern freedom does not imply the impossibility of transcendent freedom; on the contrary, it is perhaps a condition of its existence. Realization. Hence the importance of raising and striving to achieve transcendent pedagogical goals that respond to the simplicity of common teaching, which reduces or conceals the problems. Approach with a base focused on the processes that are lived in the classroom and in society. I propose a complex vision of the act of educating, transforming the verb into educating with meaning, perhaps, educating for the libertarian utopy.

With respect to the complementarity of order-disorder, harmony-disharmony, chaos-cosmos, Morin pointed out the existence of three principles that make it possible, namely, (a) dialogic principle: "allows to maintain duality within the unit. It associates two terms at once complementary and antagonistic" (Morin, 2008, p.106), (b) principle of organizational recursion: "The recursive idea is, then, an idea that breaks with the linear idea of cause / effect, of Product / producer, of structure / superstructure, because everything that is produced reenters over that which has produced it in a self-constructive, self-organizing, and self-producing cycle in itself" (Morin, 2008: 107) And (c) hologramatic principle: "... we can enrich the knowledge of the parts by the whole and the whole by the parts, in the same knowledge-producing movement" (Morin, 2008, p.

It is necessary, therefore, to take a critical stance, to appropriate a being-in-the-world, that is, to give an account of the ways of being and to value what the educator has and, from that analysis, to answer the question Why educate? In the present research, the pedagogical position that I suggested is an education for freedom in a transcendent sense (with attachment to universal values) from the phenomenological and hermeneutic reflection with students of secondary level. Thus, in the midst of this tension, the reason for education allows us to trace a route and give meaning to teaching practices. "There is no way of thinking about the educational fact without reference to its for what. After all, whenever you educate, you educate someone, for something. This for something is consubstantial to the formative action" (Fullat, 2011, p. 31).

The research techniques used were focus groups and in situ observation. In the focus groups, a topic was discussed in order to structure a knowledge that is sometimes fragmented.

In this regard, Korman quoted by Aigner defined the focus groups as: "A meeting of a group of individuals selected by researchers to discuss and elaborate, from personal experience, a social theme or fact that is the object of research" (Aigner, M (2002), p.2). The focus groups allowed me to account for the forms shared by the students as to the objectification and anchoring of the notion of freedom, as well as to show contradictions present in the discourse itself and in the confrontation of the discourse in the focus groups, with what is observed from the field diary that I will explain below.

In situ observation refers to the researcher going to the place where the phenomenon investigated to describe the events that arise in the given time that the observation lasts. Hernández and colleagues reported that some of the purposes of qualitative observation are "to explore environments, subculture contexts, and most aspects of social life" (Grinnell, 1997, cited by Hernández et al., 2010, p.412). The observation that I realized was of participant character since I carried out it from my teaching practice with the students studied. Based on Hernández (2010), I affirm that I made a kind of complete observation because I served as a more participant - teacher role - intermingling with the students.

I made the observation during the months of October 2012 to February 2013. I recorded the observation in a field diary at the end of the class. I pointed out important events related to the variables of the investigation. I asked the students to record in a group diary the relevant events raised during the day from anecdotes narrated and described in detail, in order to reinforce my observation and account for some of the events that were later reported in the focus groups, As well as to set the script for them.

Results

The concept of freedom is lived by students from everyday actions in their relations with themselves and with the other, so that existence acquires meaning from two ways of exercising freedom, namely (a) rebellion and (B) submission. Same as two identities that students construct. The rebellion is shown in two facets, as rejection of what they consider absurd of the rules and as rejection by desire of popularity.

The rejection derived from the absurdity of norms implies the recognition of a transcendent exercise of freedom, since the norms do not suppose universal values nor the recognition of the integrity of the human being. Whereas the rejection by desire of popularity is symptomatic of the desire for an immediate pleasure that I call postmodern hedonism, because the important thing is not the benefit that supposes the norm but the social status that gives not to fulfill it; This manifestation is an example of the absence of transcendent freedom and the exercise of a postmodern freedom, in the style of the esthetic stage proposed by Sören Kierkegaard (2014).

For its part, submission is the acceptance of the rule for fear of authority, in Kierkegaard represents the ethical stage, for submission leads to an unconscious morality since the rule is followed without knowing why it is followed. Submission, then, does not suggest the exercise of freedom; Following Flores (1987) submission does not include the exercise of virtue but a decay of ideals.

There is a confusion in schools between conventionality and morality that is evident when the demands that teachers have with students appeal to convention rather than to morality.

The above results in conflicts of school coexistence due to nonconformities of the different actors involved in education, whether students, teachers, managers or parents. I then define both concepts.

Social conventions:

Turiel (1983) defined social conventions as follows: "they are behavioral uniformities that coordinate the interactions of individuals within social systems." Social conventions acquire validity through consensus, that is to say, it is not a question of imposition, rather, there must be a common agreement to establish them. In addition to the above, social conventions imply a degree of social organization that allows for the coordination of the interactions of individuals within the social system (Turiel, 1983, p.).

We are faced, therefore, with behavioral statutes that try to generate harmony in society. However, it is pertinent to question the genesis of these norms, since at times it seems that they propose us to act outside ethical principles. In other words, depending on who governs, for example, the types of social norms that will be established, even against a majority of people who do not agree with the ideals of that government.

Morality:

"The moral theories formed by individuals are based on concepts about people's well-being, their rights and justice, in the sense of a comparative treatment of them and a means of distribution" (Turiel 1983: 49). Moral actions are not the product of arbitrariness; Are bounded by factors inherent in social relations rather than by a particular form of social organization (Turiel 1983: 49). In the domain of morality we do not speak of a consensus that gives it validity.

Although becoming makes societies contingent systems, it seems obvious to me that there are principles inherent to the human condition, for example, if we reflect from a biological point of view, the human being, which we consider rational, owner and boss in the world, belongs to the species of mammals. Before the invention of societies, millions of years passed in which homo sapiens governed their conduct on the basis of the mammalian instinct of their species. Prevalence, above all, a sense of survival of the species. Piotr Kropotkin pointed out the following:

Animals in general, from the insect to the man, know perfectly the good and the bad without consulting for that the bible nor the philosophy. And if this is so, the cause is also in the needs of his organism, in the conservation of the race, and therefore in the greatest possible amount of happiness for each individual (Kropotkin, 2008. p.26).

It is imperative to subject to radical doubt the school norms that we are instilling in our students. Consider, for example, a Catholic school, in addition to the social norms devoid of morality, religious norms are also taught that become, in a state of religious alienation, because based on a banking vision of education, the student, based on Repetition, learn ways of being and value the world from the religious, understood as the constant repetition of prayers.

Students reject the established norm; but, at the same time, they recognize them as necessary to define the school's work, that is, the norm is fundamental to contain and determine actions that benefit the community. Returning to Kierkegaard (2014) when he posited the aesthetic and ethical stages, the norm supposes boredom since it is the constant repetition of the norm without being fully convinced of it.

At the same time, it is necessary to maintain a social welfare, because despite the rejection, they continue to maintain a harmony even without conviction. When students reject the rule, rejection is caused because they recognize that their acceptance leads to massification, because it conditions thinking, words and actions, for example, uniformity in dress, hairstyle and hair color; Hence the exercise of freedom is non-submission to postulates considered absurd because of its tendency to overcrowd: "[the regulation] has some benefit in which I make you order, this, so have some things conditioned by what I think that in some way it is done for the sake of the student "(Focus Group Discussion, 2013, June, 25).

Regarding the type of education, I note that the rebellious and submissive identities shown by some students studied, to a certain extent, respond to educational practices based on the banking and problematizing visions postulated by Freire (2005). It is not possible to speak of pure bankingism or pure criticism; the data show that there is a hybrid in terms of the possibilities that a certain type of education offers. The students receive a banking education based on an imposition, sometimes authoritarian, of norms devoid of transcendent formative sense, yes of a disciplinary nature for the sake of a massification.

In this sense, I highlight weak modifying elements that hold hopes of thinking about a different reality, which allow me to subscribe to one of the French students' May 1968 slogans: "Let's face it, let's ask for the impossible." When students place universal values as a guide to ethical reflection, through the recognition of transcendent ethical principles such as respect;

Even if it does not transcend the theoretical scope in all of the occasions, it is a sample of small nuclei of good sense that if they were enhanced, perhaps they would be the basis of a society more human, more beautiful and happier.

The rejection shown by students towards absurd norms (punitive towards massification) is, following Buenfil (1994), rejection of the real and openness to the imaginary, to lapsus, is the possibility of a change of meaning directed to The practice of new transcendent values arising from the very affects of the human being. For Sartre (1998) is to commit to the whole humanity in the achievement of utopia. Below I describe some of the social representations on freedom of Queretano students of secondary level.

Social representations of freedom / transcendent, postmodern and submissive

In his song *La Granita de Kundera*, Joan Manuel Serrat shows nostalgia for another time when the grannies read the sky and cooked the bread. Thus Serrat shows a fundamental tension for the present analysis of social representations on transcendent freedom (with attachment to universal values), postmodern (hybrid / pastiche) and submissive. Tension is modernity-postmodernity. The collapse of metarrelates (Lyotard, 1990) suggests the need for new sense-forming parameters.

It is important to emphasize that the objectification and anchoring of the RrSs is not given in a pure way, so as to affirm a radical dilemma between the transcendent and the postmodern. Rather, both intermingle giving way to cores of transcendent meaning in the postmodern and visions of fragmentation in the transcendent. Resuming the paradigm of the complexity of Morin (2008), is a chaos harmonic or a chaotic harmony.

In any case, it is viable to only describe the contradictions present in the studied students, recognizing the complexity of the real, to describe RrSs without falling into a theoretical box and, in addition, to assume a pedagogical posture coherent with the historical and material reality of the students.

The process of objectification of the social representation is, at first, with the selection and decontextualization of the elements (Mora, 2002). From the data collected, I note that the students harbor the normative discourse of the school, speeches of the media and their own desires and desires. This taking on discourses gives way to contradictions given the differences between them; these contradictions are manifested in practices, ideas and feelings of freedom.

As for the normative discourse of the school, this is manifested through disciplinary norms, some of which are conceived by students as absurd and others as precepts that pursue the welfare of the community. For example, students reject standards that claim mastery, such as unification of hairstyle, color of tennis, and school uniform. They value valuable norms that promote the recognition of the human dignity of the members of the social group, such as respect in their different manifestations.

With regard to the discourse of the mass media I notice that the students recognize ways of valuing emerged from media campaigns of the media. They accept that fashion gives status or that certain brands exalt the personality, this is a sample of the appropriation of the discourse of the means. It should be noted that this appropriation is not the only way to assume the discourse of the media because they also pointed out that the value of the person goes beyond appearance, that is, there are contradictions resulting from an identity in construction.

As for their own yearnings, such as the desire for a free expression of feelings through art or the desire for happiness found in the construction of a project that involves studies, work, economic stability and the establishment of a family; I consider that it is a sign that the students studied are constructing their identity and, in this process, they manifest a constant swing between the different discourses.

The second moment of the process of objectification of a social representation is the formation of the figurative nucleus, which emerges from the selection of information and represents the sustenance of social beliefs (Mora, 2002).

From the results obtained, I find that the students studied materialize the information about freedom and form three figurative nuclei that have a non-exclusive character, that is, they are intermingled giving way to hybrid identities. The nuclei that I distinguished are: (A) submission, (B) transcendent rebellion and (C) postmodern rebellion; which are based on the organization of the information gathered from school discourses and the media, as well as from their own desires and wishes. Then I explain what each one consists of.

(A) Submission: in front of the normative discourse of the school, the students assume a submissive identity because they fear the punitive action of the authority. This attitude manifests itself through resignation to comply with what the authority says even if they do not agree with it, even having arguments that justify their disagreement.

I believe that this figurative nucleus / identity based on submission is transversal to the banking model of education postulated by Freire (2005).

Since the authority transmits forms of being and to value what it believes to be true and correct and imposes on the pupil its fulfillment in the interests of well-being Of the community.

(B) Transcendent Rebellion: Here the students reject the normative discourse of the school and transgress the rules appealing to the absurd character that they have. They consider them absurd because they consider that they are aimed at a practical massification of school everyday and not, properly speaking, towards a formation of the human being, to be more, as suggested by Freire (2005).

It is desirable to recognize that this figurative nucleus / identity based on transcendent rebellion is transverse to the model of problematizing education suggested by Freire (2005), since the student, given a given reality, reflects, criticizes and rebels before it not Unconscious way but from the recognition of the absurdity that implies.

(C) Postmodern Rebellion: it is a figurative identity / nucleus based on the transgression of school norms resulting from the desire for popularity. Here the students violate the rules established in the school in order to have a higher social status among their peers.

It is pertinent to mention that this identity is a symptom of the postmodern context pointed out by Lyotard (1990), Sartori (2001), Lash (1997) and Lipovetsky (2010). It shows that the emptiness left by the collapse of meta-narratives, technological advances, globalization and empire of the image is filled with attitudes, practices, ideas and feelings that place the over-being more (Freire, 2005).

It is noteworthy that the figurative nuclei are not in a state of exalted purity, that is to say, there are no totally submissive or rebellious students; rather, they are identities with weak modifying elements, which show the contingent character of the construction identity of adolescents.

The third step in the process of objectifying social representation is naturalization. Here RRSs become generalized and accepted in the social group (Mora, 2002). I estimate that the students studied are habituated to the social representations of freedom from the incorporation of the figurative nucleus in the social belief system.

In this sense, diluted three social representations on freedom, namely, transcendent freedom, postmodern freedom and submissive freedom; which are incorporated into the generalized beliefs of the social group. That is, they give way to a worldview of the group. In other words, they represent an ontological positioning against the world insofar as they assume existence from representation (being-in-the-world); At the same time, it is an epistemological stance because reality is conceived from socially shared representation.

The anchoring process is the incorporation of representation into the pre-existing value system in society (Mora, 2002). In addition, it has cognitive functions, interpretation of reality and orientation of behaviors, which are given in dialectical relation to objectification (Jodelet, 1986).

The anchoring in the studied students occurs in the measure that, in addition to the integration of the information in the belief system (speeches / wishes) and the interpretation of the reality that they make from this one (ontological and epistemological character).

Manifest practices, feelings and ideas related to the social representations of freedom (practical axiological dimension). I distinguish three ways in which students anchor the notion of freedom, which suggest the existence of at least three social representations about freedom in secondary school students. I briefly describe each one of them.

(A) Social representation on freedom in a transcendent sense

It is constituted of weak modifying elements because even when the context of the students studied is called postmodernity, I found traces of a way of exercising freedom in accordance with universal values (respect, human dignity). This representation is manifested in practices, feelings and ideas, with an emphasis on the sentimental / spiritual dimension of the human being.

I notice that students recognize values such as respect or dignity of the other as moral compasses. An example of the above are some reactions to the dilemma raised in the focus group. In some of the answers there is a recognition of human dignity as the limit of freedom of expression.

The aesthetic dimension becomes evident, in the social representation about freedom in a transcendent sense, to the moment that the students recognize art as a refuge in which they can freely express feelings that in the daily life of the school they are difficult to do, either By the punitive nature of the authority or by the fear of mocking the rest of the group.

As for the political dimension, some students recognize the importance of forming community within their social groups.

It is manifested in actions in favor of the group rather than in favor of the individual, such as mutual support at the time of performing a school task, as well as in rejecting certain school rules aimed at massification and not at student training. In this regard, I welcome the fact that a student comments during a focus group that bringing tennis of different color does not affect the student to go to school to study and respect his colleagues and teachers.

Now, the contradiction between theory and practice is evident, for despite the recognition of these values, not all practices, ideas and feelings are in such virtue. Hence, this social representation is acculturated as a nucleus of good sense. It is, perhaps, a subtle approach to the religious stage proposed by Søren Kierkegaard (2006) because it represents the recognition of one's own finitude and contingencies in the face of the supreme, in this case, universal values (respect, human dignity). (B) Social representation of freedom in the postmodern sense

This second way of embodying the notion of freedom is based on feelings, ideas and practices based on values such as selfishness, hedonism, relativism and pragmatism. Here students anchor freedom from action based on immediacy, the state of affairs (Vattimo, 2002) and the weak notion of community that is overshadowed by excessive selfishness.

As for the political dimension, I notice that the students studied show disjunctive relations in which it is difficult to appreciate the other. Conflicts are usually resolved by arguments that insult one another because of the non-acceptance of a different thinking to one's own. Situation that places them in egoistic (not recognizing the other) and relativistic attitudes (each has its own reason and is true).

In addition, there is a transgression of the norm by desires of popularity, which allows to elucidate models of conduct based on an uncritical rebellion. This is a source of difficulties because there is chaos within the social group.

In relation to the ethical dimension, I warn that students anchor the notion of freedom based on a moral reflection based on the assumption that the greater personal benefit greater degree of goodness manifests the action, ie is a moral based on a perspective Selfish because the other is second. Likewise, the postmodern identity, based on this social representation, shows a fragmentation of the human being and its relations since hedonism, based on the necessity of satisfying immediate and vertiginous pleasures, generates that the affective relations with the other are of ephemeral character. It is, perhaps, an approach to the aesthetic stage posed by Kierkegaard (2014) where one loves to desire someone and, as soon as one has it, the desire is satisfied and the desired object is discarded.

In relation to the aesthetic dimension, I believe that the students mean the notion of freedom from the acceptance of norms that limit free artistic expression, particularly with regard to music, painting, tattoos and piercings. This situation leads the student to show masks in accordance with accepted social statutes, to the detriment of the possibility of freely expressing their aesthetic notions.

In the same way, I would like to point out that students tend to value each other based on certain physical and fashion characteristics, linked to marketing campaigns shown in the media, which give greater value to the human being. In terms of Freire (2005) it is placed to have more than being more, because they estimate that the greater the economic possibilities, the greater the happiness of the individual.

(C) Social representation on freedom based on submission

From the data collected, I find a third way in which students represent the notion of freedom, namely, founded on submission. I note that this finding was made from the political dimension, specifically in the indicator of attitudes towards school regulations.

This social representation is based on fear, since students decide to abide by rules for fear of punitive action by authority. Even though some recognize the absurdity of the norm, they assume that they have only to comply with it and with it avoid confrontations with the school authority. I emphasize that this social representation is a hand in hand for reflection and research on the role of authority of teachers and managers, as well as the ways in which this authority is exercised over students.

It is important to note that the three social representations described above, I organized them in this way to give greater clarity to the reader. However, in reality none of them are shown in pure state (totally critical, postmodern or submissive students), but they are manifested chaotically. Chaos that is, perhaps, principle of order, following Morin (2008).

Then I pose my pedagogical position on the subject researched, based on a transcendent exercise of freedom. It is important to note that the weak modifying elements mentioned above were necessary for the pedagogical proposal, since the educator, as Durkheim (2009) pointed out, is not in front of blank minds nor completely ordered. In other words, there is no educational panacea, there are pedagogical efforts based on a certain empirical reality.

Pedagogical proposal based on a transcendent sense of freedom

Like a leaf that falls from the tree in the fall, so the values of modernity collapse before the implacable advance of globalized, postmodern, technified and free-market society. There are adjectives to try to describe the state of degradation and putrefaction in which society weakens. As José Saramago wrote, "If we are not able to live entirely as persons, let us do our utmost not to live entirely as animals" (Saramago, 1998, p. 151).

In the midst of camel-lions (Nietzsche), video-children (Sartori), rotten politics (Peña Nieto, education reform), banking education (Freire), there are still educators who cling to the weak water drops that are in the roots from the tree. Why believe in utopia? What a question, Galeano answered by saying that it helps us to walk, now the question becomes: why walk?

A few weeks ago I commented with my university and high school students the need to re-signify our existence, to give a transcendent value to the tiny things that nature - including the human being - offers us and allows us to have unsuspected aesthetic experiences. As teachers helps us to have active the, sometimes uncomfortable, question of why educate? We remembered some anecdotal passages of Diogenes de Sínope, the dog philosopher, the greatest exponent of cynical philosophy who gave up any comfort for the sake of an ideal, namely living according to nature, living as a dog (Marchand and Sorel, 2012). We agreed that in the midst of the existing triviality, the educator should bet to teach to live from his own experience, which implies wisdom.

Overwhelmed by these questions I left for a moment the academic tasks, I went out to see the sunset in the San Pedro dam in the municipality of Huimilpan Queretano.

Every breath of air entering my lungs was accompanied by a wonderful print, worthy of a postcard. I noticed that when the sun fell, the noises of cars and machines that worked in the place also fell a little. I realized that the darkness is preceded by luminosity and vice versa.

He was not yet fully convinced of the answers to questions about the re-signification of existence and the question of what to educate. A few days later, I went to teach warband with my little preschool students. However, they celebrated a meeting in which they were allowed to wear their tricycles and play in the schoolyard. The courtyard of the school is guarded by a beautiful and leafy jacaranda; As usual in these trees, the patio is a huge lilac flower rug that was cleaned for the occasion, leaving only a few leaves on the floor. A boy of about five years was riding at full speed in his tricycle and stopped suddenly in front of one of these jacaranda flowers; Without anyone asking him, got out of his vehicle, took the flower, looked at it, caressed it, smelled it, greeted it, placed it carefully in the basket of his tricycle, climbed on it and continued his march at full speed playing with The other children. That child of jacaranda flower gave me a great lesson on the meaning of teaching and freedom.

Nietzsche (1971) rightly affirmed that the transformation to become supermen is in children, whose innocence allows us to create a new scale of values and even a new society. Where man is overcome and gives way to the superman. Perhaps the child and the jacaranda are a symptom of the advent and the sighting of a new society, because despite the existing degradation there are jacaranda flowers thrown, children who pick them up and teachers we educate to collect them; To believe this gives meaning to my teaching practice, because the educator who does not believe in utopia runs the risk of falling into the systemic.

Postmodern view where man is but one more piece of the wall called barbarism.

To live without social bonds that contain your freedom, is the great teaching of Diogenes the dog, of the crazy Socrates as he called Plato, or sincere Socrates as he should have called him according to Cioran (1998). Socrates was nicknamed "Horse of Athens" because it awakened the city with its bites (questions), whereas Diogenes was the dog because it barked to wake the city. However, Diogenes' philosophy had different facets, namely, (a) no object possesses me, (b) barking to awaken the sleeping people, and (c) licking the hand of the friend and taking care of him.

The educator, making analogy with the cynical philosophy, can not bark in such a way that it frighten and confront freedom, nor can it bark so softly that it does not move the feelings of the students and this prevents the full exercise of freedom. Rather, he must be an artist, a craftsman of knowledge, he must strike the balance between the barking that frightens and the bark that does not move feelings. To achieve, therefore, to move their students so that they can re-signify their existence, from sublime aesthetic experiences, and live new ways of relating to nature and society. Transcendent forms that humanize, dialogically, in a word, the utopia of a beautiful world as a sense of life.

But not only is the child the source of that new society. As romantic as it may seem. To recognize it would be tantamount to accepting a state of ideal purity nonexistent in reality, and yet believing in that possibility of being gives a transcendent meaning to educational practices. Next I present a pedagogical proposal based on the data collected and analyzed in the present investigation; particularly in the weak modifying elements that I found.

B. Traven (2003) postulated in his story "Canastitas en serie" as an indigenous Oaxacan decided not to malbaratar the baskets that he made, in front of a North American businessman who saw in the baskets a lucrative economic profit. But the refusal of the Oaxacan indigenous was not for the unprofitable that the business was for him (sold for a few cents, resold in several dollars) but because "I have to make those little baskets my way, with songs and bits of my own soul. If I am forced to do them by thousands, I will not be able to have a piece of soul in each one, nor will I be able to put my songs in them. They would all be the same, and that would eventually devour my heart piece by piece "(Traven 2003, 27).

I use Traven's (2003) story as a starting point for the pedagogical proposal of an education for freedom in a transcendent sense (with respect to universal values - respect / human dignity), because it represents the principle of pedagogy that I raise, Know, value human-nature-society relations, which recognize the human dignity and value that Mother Nature has.

Within the framework of the tension between banking and problematizing education suggested by Freire (2005), among the findings of the present research, weak modifying elements such as the recognition of human dignity as a limit of freedom of expression and the role of Transcendent ethical values as guides to moral reflection.

However, the problem of the tense theory-practice relationship generates that these weak modifying elements are sometimes dismissed by teachers. For even when it seems obvious that it does not manifest itself very often in the concrete actions of students in school, it is taken as the isolated case.

Now, I think that in order to estimate the nuclei of good sense mentioned above as valuable, it is necessary to encourage in ourselves (teachers) and then in our students the need to re-signify existence, to take a leap from the postmodern everyday And find spaces of reflection, aesthetic enjoyment, community relations, which are the foundations of a non-postmodern ontological perspective.

It seems that Mexican formal education at the beginning of the 21st century has privileged the formation of practices (through correctives) and ideas (theories) and left out the formation of feelings. The pedagogical proposal that I raise, assumes that when a person is moved in their feelings, it is more likely that their practices, ideas and behaviors are modified.

Derived from the above, teachers have in the imperative need to imagine didactic strategies that allow to move the feelings of the people towards a re-signification of existence, highlighting the intrinsic relationship between man and nature as a part of our human essence. Once this is achieved, we will undoubtedly be teachers with greater wisdom and we will have wiser students. In this context, it will be possible to exercise freedom in accordance with the value of human dignity, community, dialogue, consensus and respect for different forms of life.

In this regard, Ibarra (2010) postulated that wisdom "It is not something given. It is not a thing in itself. It is, rather, an orientation, it is a compass that guides towards what seems the best decision "(Ibarra, 2010, 27). Thus, to exercise full freedom or to teach to exercise full freedom implies, above all, wisdom. Only from this, we can re-signify our existence and contribute in the processes of the students for the same effect.

It is desirable to accept that we are not producers of baskets in series as Traven (2003) pointed out. Our students are not the same or live the same processes. Each of them as well as ourselves, possess intrinsic freedom of action, expression and thought. Perhaps the first two can be restrained by some external agent (authority, owners of means of production); Freedom of thought can be alienated if and only if we allow it.

In each student and in each class we must put, like the Oaxacan Indian in his baskets, a bit of our soul and in this beautiful profession our whole soul. Classroom space is inalienable; Beyond plans, programs, educational (labor) reforms, that space that becomes a temple of wisdom, is our space that is eagerly awaiting us to take steps towards the utopia of a more human, more beautiful and happier world ; And not, upside down as it is now.

The child and the jacaranda are a beautiful metaphor and, at the same time, a hand-out to critical reflection on our teaching practices. It is necessary to question the ontological role of education. Why educate? To form free and autonomous men capable of de-building postmodern society from the ashes of transcendence in it. How to achieve it? Re-signifying our existence from a more humane and beautiful relationship with nature and with the other, like the child and that jacaranda flower.

Conclusions

The most important findings of the research were the three social representations of student liberty, namely, transcendent, postmodern, and submissive. Same that they manifest chaotically in reality, that is, students show hybrids of the three representations.

It should be noted that the reality of freedom is complex, because it is not expressed in an ideal way, but through contradictions that are evident in practices, feelings and ideas of students.

The social representation of freedom in a transcendent sense constitutes a nucleus of good sense that, based on the possibility that precedes the real, treasures the hope of building a more humanized society. In this sense, in spite of banking education, students recognize universal values such as respect or human dignity. They are accepted as ideal moral guides.

Hence the present research is an invitation to teacher reflection on practices in the classroom and beyond. It is convenient to inquire whether the didactic strategies that we use recover the weak modifying elements about transcendent freedom to lay the bases of transformation that give way to a new society.

In this sense, I found that even in spite of the so-called vacuum era or postmodern era, there are lights in the middle of the shadows, these lights allow to suppose that everything is not sunset. That reality, however pessimistically we want to see it, is not so bad. There are practices, feelings and ideas that account for a sensitive, loving, critical and reflective man.

Perhaps the banking education practices are not so despicable, perhaps there is the possibility of transmitting transcendent values, perhaps we can exercise a loving teaching, perhaps there is consensus from the dissent, maybe we can educate to humanize, maybe we can educate with the heart to contribute to That the students reach their fullness, perhaps we can build a truly free society. They are only assumptions and suggestions arising from the research.

The study opens several possible lines of research, among which I highlight two. In the first place, a study about didactic strategies that allow to use the modifying elements weak to realize an operability of the findings of this work. Secondly, it would be illusory to think that the only work of teachers is enough to transform society, therefore, a second line of research is directed towards the formation of parents that takes place in secondary schools.

Also, one of the limits of the research that guides the conduct of another study, starts from the following question: How, where and among whom do the nuclei of good sense of freedom found in students of secondary level arise?

Additionally, the research contributes elements that will allow to reflect and to improve the teaching practices of the professors of the secondary level in general.

References

- Aigner, M. (2002). "La técnica de recolección de información mediante los grupos focales" La sociología en sus escenarios. Núm. 6. Colombia Recuperado de: <http://aprendeenlinea.udea.edu.co/revistas/index.php/ceo/article/view/1611/1264>
- Aristóteles. (1988). Política. Madrid: Gredos.
- Buenfil, R. (1994). Cardenismo. Argumentación y antagonismo en educación. México: DIE-CINVESTAV-IPN-CONACIT.
- Cioran, E. (1998). Adiós a la filosofía y otros textos. Madrid: Alianza.
- Comte, A. (2004). Curso de filosofía positiva. Buenos Aires: Need.
- Durkheim, É. (2009). Educación y sociología. México: Colofón.
- Farr, R. (1986). Las representaciones sociales. En Psicología Social. (Coord) Moscovici, S. Barcelona: Paidós
- Ferrater, J. (1999). Diccionario de filosofía. Barcelona: Ariel.
- Flores, R. (1987). Regeneración. México: ERA – SEP.
- Freire, P. (2005). Pedagogía del oprimido. México: Siglo XXI.
- Freire, P. (1997). Pedagogía de la autonomía. Saberes necesarios para la práctica educativa. México: Siglo XXI.
- Freire, P. (2011). La educación como práctica de la libertad. México: Siglo XXI.
- Friedman, J. (2001). Identidad cultural y proceso global. Buenos Aires: Amorrortu.
- Fullat, O. (2011). Homo educandus. Antropología filosófica de la educación. Puebla: Lupus Magister.
- Gadamer, H.G. (2001). Verdad y método I. Salamanca, España: Sígueme.
- Galeano, E. (1998). Patas arriba. La escuela del mundo al revés. México: Siglo XXI.
- Gramsci, A. (1999). Antología. México: Siglo XXI.
- Gramsci, A. (1999). Cuadernos de la cárcel. Puebla: BUAP.
- Güemes, C. (2003). "La identidad del maestro de educación normal. Entre representaciones e imaginarios sociales" en Representaciones, imaginario e identidad. Actores de la educación superior; (Coord) Piña, J.M. México: UNAM-CESU, Plaza y Valdés editores.

- Heidegger, M. (1998). *Identidad y diferencia*. Barcelona: Anthropos.
- Hernández, R. et al. (2010). *Metodología de la investigación*. México: Mc Graw Hill.
- Ibarra, L. (2010). "Sabiduría: diálogo y educación". *Revista electrónica "Actualidades investigativas en educación"*, vol. 10, núm. 2, mayo-agosto, Universidad de Costa Ricas, San Pedro de Montes de Oca, Costa Rica. Recuperado de: <http://www.redalyc.org/articulo.oa?id=44717910018>
- Jodelet, D. (1986). *La representación social: fenómenos, concepto y teorías*. En *Psicología Social*. (Coord) Moscovici, S. Barcelona: Paidós.
- Kierkegaard, S. (2014). *Diario de un seductor*. México: Tomo.
- Kierkegaard, S. (2006). *El concepto de la angustia*. Buenos Aires: Libertador.
- Kierkegaard, S. (2006). *Estética del matrimonio*. Buenos Aires: Leviatán.
- Kropotkin, P. (2008). *La moral anarquista*. Buenos Aires: Libros de Anarres.
- Lash, S. (1997). *Sociología del posmodernismo*. Buenos Aires: Amorrortu.
- Lytard, JF. (1990). *La condición postmoderna*. México: REI.
- Lipovestky, G. (2010). *La era del vacío*. Barcelona: Anagrama.
- Marchand, Y. y Sorel, V. (2012). *El filósofo perro frente al sabio Platón*. Madrid: Errata Naturae.
- Martínez, M. (2004). *Ciencia y arte en la metodología cualitativa*. México: Trillas
- Marx, K. (1989). *Introducción general a la crítica de la economía política / 1857*. México: Siglo XXI.
- Montesquieu. (1971). *El espíritu de las leyes*. México: Porrúa.
- Mora, M. (2002). "La teoría de las representaciones sociales de Serge Moscovici" *Athenea digital*. 2. México. Recuperado de: <http://blues.uab.es/athenea/num2/Mora.pdf>
- Morin, E. (2008). *Introducción al pensamiento complejo*. Barcelona: Gedisa.
- Moscovici, S. (1979). *El psicoanálisis, su imagen y su público*. Buenos Aires: Huemul.
- Moscovici, S. (2002). "La representación social: un concepto perdido", en: *Taller interactivo: prácticas y representaciones de la Nación, Estado y Ciudadanía en el Perú*. Lima: Instituto de Estudios Peruanos. Recuperado de: <http://www.cholonautas.edu.pe/modulo/upload/tallmosc.pdf>
- Nietzsche, F. (1971). *Así hablaba Zaratustra*. Madrid: EDAF.
- Ovelar, N. (2008). "Paulo Freire: gusto por la libertad y pasión por la justicia" *Educere*. Enero-marzo. Año/vol. 12. Número 040. Venezuela. Recuperado de: <http://redalyc.uaemex.mx/redalyc/src/inicio/ArtPdfRed.jsp?iCve=35604022>
- Platón. (1986). *Diálogos*. Madrid: Gredos.
- Saramago, J. (2010). *Ensayo sobre la ceguera*. México: Alfaguara.

Sartori, G. (2001). Homo videns; la sociedad teledirigida. México: Taurus.

Sartre, J. (1998). El existencialismo es un humanismo. México: Peña hermanos.

Snyder, G. (1971). Pedagogía progresista. Educación tradicional y educación.nueva. Madrid: Marova, S.L.

Tomé, J. (2004). Las identidades. Las identidades morales y políticas en la obra de Jürgen Habermas. Madrid: Biblioteca Nueva.

Traven, B. (2003). Canasta de cuentos mexicanos. México: Selector.

Turiel, E. (1983). El desarrollo del conocimiento social. Moralidad y convención.Madrid: Debate.

Vattimo, G. (2002). La situación afectiva y el estar lanzado, en: Introducción a Heidegger. Barcelona: Gedisa.

Instructions for authors

[Title in Times New Roman and Bold No.14]

Last name -First name, (in uppercase) -1st † Last name -First name (in uppercase) -2nd Author's name

Institutional mail No.10 Times New Roman and Italic

(Report Submission Date: Month, Day, and Year); accepted (Insert date of Acceptance: Use Only ECORFAN)

Abstract

Title

Objectives, methodology

Contribution

(150-200 words)

Keywords

Indicate (3-5) keywords in Times New Roman and Bold No.11

Citation: Last name -First name (in uppercase) -1st † Last name -First name (in uppercase) -2nd Author's name. Paper Title. Title of the Journal. 2015 1-1: 1-11 - [All in Times New Roman No.10]

† Researcher contributing as first author.

Instructions for authors

Introduction

Text in Times New Roman No.12, single space.

General explanation of the subject and explain why it is important.

What is your added value with respect to other techniques?

Clearly focus each of its features

Clearly explain the problem to be solved and the central hypothesis.

Explanation of sections Article.

Development of headings and subheadings of the article with subsequent numbers

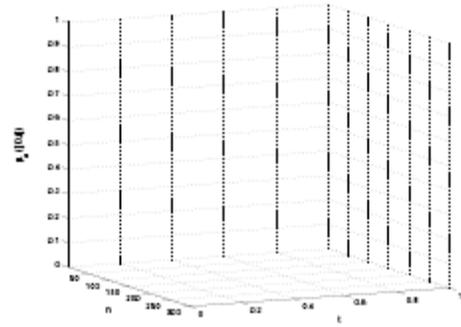
[Title No.12 in Times New Roman, single spaced and Bold]

Products in development No.12 Times New Roman, single spaced.

Including graphs, figures and tables- Editable

In the article content any graphic, table and figure should be editable formats that can change size, type and number of letter, for the purposes of edition, these must be high quality, not pixelated and should be noticeable even reducing image scale.

[Indicating the title at the bottom with No.10 and Times New Roman Bold]



Graphic 1 Title and Source (in italics).

Should not be images-everything must be editable.

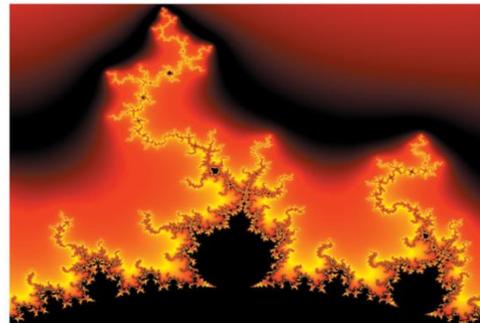


Figure 1 Title and Source (in italics).

Should not be images-everything must be editable.

Table 1 Title and Source (in italics).

Should not be images-everything must be editable.

Each article shall present separately in **3 folders**: a) Figures, b) Charts and c) Tables in .JPG format, indicating the number and sequential **Bold Title**.

Instructions for authors

For the use of equations, noted as follows:

$$Y_{ij} = \alpha + \sum_{h=1}^r \beta_h X_{hij} + u_j + e_{ij} \quad (1)$$

They must be editable and number aligned on the right side.

Methodology

Develop give the meaning of the variables in linear writing and important is the comparison of the used criteria.

Results

The results shall be by section of the article.

Annexes

Tables and adequate sources thanks to indicate if they were funded by any institution, University or company.

Conclusions

Explain clearly the results and possibilities of improvement.

References

Using APA system, should **Not** be numbered, either bulleted, however, if necessary, will be because reference number or referred to in any of the article.

Data Sheet

Each article must submit your dates into a Word document (.docx):

Journal Name

Article title

Abstract

Keywords

Article sections, for example:

1. Introduction

2. Description of the method

3. Analysis from the regression demand curve

4. Results

5. Thanks

6. Conclusions

7. References

Author Name (s)

Email Correspondence to Author

References



Leon, Republic of Nicaragua _____, _____ 20_____

Originality Format

I understand and agree that the results are final dictamination so authors must sign before starting the peer review process to claim originality of the next work.

Article

Signature

Name



Leon, Republic of Nicaragua ____, ____ 20____

Authorization Form

I understand and accept that the results of evaluation are inappealable. If my article is accepted for publication, I authorize ECORFAN to reproduce it in electronic data bases, reprints, anthologies or any other media in order to reach a wider audience.

Article

Signature

Name

ECORFAN Journal-Republic of Nicaragua

“Determination of the water irrigation quality on the heavy metals concentration in agricultural soil and maize cultivated in the Valle del Mezquital, Hidalgo, Mexico”

VÁZQUEZ-NÚÑEZ, Edgar & HERRERA-TELLEZ, Mario

Universidad de Guanajuato

Universidad Tecnica de Tula-Tepeji

“Estimation of energy potential of the main crop residues generated in the state of Hidalgo, Mexico”

VÁZQUEZ-NÚÑEZ, Edgar, VALLE-GARCÍA, Jessica Denisse, and FRÍAS-MARTÍNEZ, Teresa Yadira

Universidad de Guanajuato

Universidad de Tula-Tepeji

“Ancient Vegetables from Campeche between Disuse and Oblivion of the Current Consumer”

NIÑO, Naú, BOLÍVAR, Nidelvia and VALENCIA, Marvel

Universidad Autónoma de Guerrero

“Freedom and education in postmodernism”

GARCÍA-GONZÁLEZ, Alejandro

