



EU-LAC Foundation
Fundación EU-LAC

Digital Conference

‘European Union, Latin America and the Caribbean Young Scientists’ Networks Days 2022’

14 - 18 March 2022

Presentations

EU-LAC

EU-LAC YOUNG SCIENTISTS' NETWORKS DAYS

14-18 March 2022

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Federal Foreign Office



Programme

14 March 2022	
15:30-16:00 (CET)	Inauguration Session <ul style="list-style-type: none">○ Dr Adrián Bonilla – Executive Director, EU-LAC Foundation○ Claudia Gintersdorfer – Head of Americas Regional Division, European External Action Service (EEAS), representing the EU Co-Presidency of the EU-LAC Foundation○ Pablo Grinspun – Ambassador of Argentina to the European Union, representing the PPT CELAC
16:00 - 17:10 (CET)	Thematic Session 1: Gender Perspectives on (Higher) Education and Science <p>Moderation:</p> <ul style="list-style-type: none">○ Dr Anna Barrera – EU-LAC Foundation <p>Presentations:</p> <ul style="list-style-type: none">○ María Rocío Lazaletta, Leila Zoe Slovacek, María Solange Noblia: Gender (In)Equity in the academic and scientific environment from the recovery of experiences as women, research fellows and social workers at the National University of Mar del Plata (Universidad Nacional de Mar del Plata)○ Ana Carolina Brito Menezes: University and motherhood from the perspective of the Theory of Subjectivity (Universidade de Brasília)○ Carolina Giordano Bergmann: Female Deans - Facing male chauvinism in the highest management position of the Federal Institutes (Universidade Federal de Santa Catarina – UFSC)○ Rocío Moltoni: Reparation of gender violence in the university space (Universidad Nacional de Rosario; CONICET)○ Daniel Botero Guzmán: Does Higher Education reduce the gender gap in mathematics? (Universidad Autónoma de Bucaramanga)○ Kevin Clidoro, Emeka Okoye, Carolina Trichet Paredes: Bridging the Gender Gap in STEM Higher Education through EU-LAC Bilateral Cooperation and the W-STEM Project (Willy Brandt School for public policy at Erfurt University) <p>Comments:</p> <ul style="list-style-type: none">○ Dr Myriam Moïse – Secretary General, Universities Caribbean (UC), Vice-President for International Relations, Université des Antilles



<p>17:15-18:25 (CET)</p>	<p>Thematic Session 2: Sustainable Economic Development, Entrepreneurship, and Innovation</p> <p>Moderation:</p> <ul style="list-style-type: none">○ Daniel Lanson – Universidad Nacional de Luján <p>Presentations:</p> <ul style="list-style-type: none">○ Jorge Armando Luna Amador: Analysis of the innovative performance of companies belonging to the service sector in Colombia (Universidad de Cartagena)○ Érica Yaneth Guisao Giraldo: Effect of dynamic capabilities in supply chain innovation (Universidad de Medellín, Doctoral candidate at EAFIT University)○ Juan Carlos Urueña Mejía: Networking, its impact on managerial practices and empowerment among women entrepreneurs in Colombia (Universidad del Rosario)○ Claudia Magali Solarte Solarte: Competitiveness pole under the political, economic, social, technological, environmental and legal analysis in the Carchi-Guaitara hydrographic basin (Universidad Cesmag)○ Katty Milena Arrieta Canchila: Global Challenges of the port sector (Escuela Naval de Cadetes "Almirante Padilla")○ Keidy Johanna Peláez Higuera: Incidence of institutional policies of HEIs in the generation of academic entrepreneurship in an emerging economic context (Universidad de Manizales)○ Danilo Sorato Oliveira Moreira: The Sustainable Development Goals in the community industry of the Mista Cooperative of producers and extractivists of Rio Iratapuru in Laranjal do Jari (Brazil, Amapá) (Universidad Federal Fluminense – UFF; Instituto Federal do Amapá – IFAP) <p>Comments:</p> <ul style="list-style-type: none">○ Juan Guillermo Hoyos – Secretary General of the Colombian University Association (ASCUN), Executive Secretary of the Latin American and Caribbean Space for Higher Education (ENLACES)
<p>18:30 - 19:40 (CET)</p>	<p>Thematic Session 3: New Technologies and Digitalisation of Scientific Research</p> <p>Moderation:</p> <ul style="list-style-type: none">○ Mary Carmen Peloché Barrera – Universidad de Barcelona <p>Presentations:</p> <ul style="list-style-type: none">○ Mario Fernando Bustillo López: Use of ICT in the teaching and learning process of Organic Chemistry (Universidad Nacional de Cuyo)○ Carlos Exequiel Garay: Monitoring greenhouse emissions in 5G/6G networks



	<p>(Universidad Nacional de Tucumán)</p> <ul style="list-style-type: none">○ Pablo Jiménez: Quantification of cardiac injuries by means of Artificial Intelligence techniques (Universidad Nacional de Cuyo)○ Kevin Morales Chamorro: The future of medical technology against multidrug-resistant infections (UNICA, Nicaragua)○ Natasha Sophie Pereira: Cora Coralina's Way - Digital Passport for Pilgrims (Universidade Evangélica de Goiás)○ Sophie Laube Marcelus: From Ayiti Quest to the Metaverse of the Caribbean (Ecole Supérieure d'Infotronique d'Haïti) <p>Comments:</p> <ul style="list-style-type: none">○ Camilo Carrascal – Manager of the Innovation Centre of OEI in Colombia
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15 March 2022	
16:00 - 17:10 (CET)	<p>Thematic Session 4: Public Health (I)</p> <p>Moderation:</p> <ul style="list-style-type: none">○ Daniel Calbino Pinheiro – Universidade Federal de São João del Rei <p>Presentations:</p> <ul style="list-style-type: none">○ Maricelly Gómez Vargas: Training in psychology and mental health: the dialogic perspective (Universidad de Antioquia)○ Edgar Guillermo Pulido Guerrero: Ideas for the mitigation of pandemic-related mental health risk in the context of secondary education (Universidad Antonio Nariño)○ David Felipe Vega Villa: Research in Technology and Mental Health in the Colombian Caribbean: An introduction (Universidad del Magdalena)○ Esteban Felipe Flores Romero, Emily Betania Granadillo Castro: Parent education as a first approach to asthma management in minors: The Asthma Attack Project (Universidad Internacional del Ecuador)○ Nicolás Torres: Encounters and disencounters of the dis/abled, diverse and dissident bodies with the health system in Colombia (Universidad Nacional de Colombia)○ Gabriela Moreira Lima: Global Challenges: Fake News in times of pandemics (Universidade Federal de São João del Rei)



	<p>Comments:</p> <ul style="list-style-type: none"> ○ Dr Martha Cordero Oropeza – National Institute of Psychiatry, Research Professor UNAM
<p>17:15-18:25 (CET)</p>	<p>Thematic Session 5: Public Health (II)</p> <p>Moderation:</p> <ul style="list-style-type: none"> ○ Yenifer Suárez Díaz – Universidad Cooperativa de Colombia <p>Presentations:</p> <ul style="list-style-type: none"> ○ Livia da Costa Lemos: Implementation of a center for reception and dental trauma care of minorities, women and LGBTQIA+ population, with a history of orofacial aggression (Unigranrio) ○ Luz Marina Llangarí Arizo: Women sex workers and sexually transmitted infections: Contributions of the academia to the 2030 Agenda for Sustainable Development (Universidad Internacional del Ecuador) ○ Ariadna Feliu: The World Code Against Cancer Framework: Examples from the European Union and Latin America and the Caribbean (International Agency for Research on Cancer) ○ Daniel Andrés Vargas Tejada: Biobanks: Preserving the scientific heritage of humanity (Universidad de Antioquia) ○ Camila Abbondanzieri: South-South Cooperation in Argentina in the context of the pandemic: Approaching vaccine donations, technical cooperation, and academic support as strategies to overcome the health crisis (CONICET) <p>Comments:</p> <ul style="list-style-type: none"> ○ Dr Andrea Gómez Zavaglia – Head of Centre for Research and Development in Food Cryotechnology (CIDCA-CONICET-UNLP), Principal Researcher at National Research Council, Argentina
<p>18:30-19:40 (CET)</p>	<p>Thematic Session 6: Open, Inclusive and Citizen Science</p> <p>Moderation:</p> <ul style="list-style-type: none"> ○ Jorge David Bravo Villegas – Escuela Politécnica Nacional <p>Presentations:</p> <ul style="list-style-type: none"> ○ Jose Eduardo Leon Rojas: Open and inclusive science during pandemic times: The COVID19-EC Group - Your information pill against the coronavirus (Universidad Internacional del Ecuador) ○ Rocío Bianchi: Open Science and its impact on public policy - MASARE Project



	<p>(Sustainable Management of Aggregates in Rivers and Reservoirs) (Universidad Nacional de Córdoba)</p> <ul style="list-style-type: none">○ Jorge Alberto López Guzmán: The role of scientific publications in the privatisation and commercialisation of knowledge generated in Universities (Universidad del Cauca)○ Fabián Santos: Predicting academic performance through urban-rural gradients in Ecuador (Universidad Indoamérica)○ Andrés Valverde Farré: The importance of citizen science and open data sources as a model of co-responsibility between academia and citizenship (Universidad Piloto de Colombia; Universidad Autónoma de Barcelona)○ Germán Antonio Arboleda Muñoz: Citizen participation in processes of technological development and innovation (Universidad del Cauca)○ Abdullah Dayo: Overcoming the barriers of mobility - Higher Education in the EU-LAC space (Willy Brandt School for public policy at Erfurt University) <p>Comments:</p> <ul style="list-style-type: none">○ Dr Ignasi Labastida – Chair of the LERU Information and Open Access Policy Group, Rector’s Delegate for Open Science at the University of Barcelona
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16 March 2022	
16:00 - 17:10 (CET)	<p>Thematic Session 7: Climate, Environment, Natural Resources (I)</p> <p>Moderation:</p> <ul style="list-style-type: none">○ Francisco López – Intern, EU-LAC Foundation <p>Presentations:</p> <ul style="list-style-type: none">○ Jose Fernando Forero Quintero: The flexibility of electricity grids as a key element for the energy transition and the fulfillment of Goal 7 of the SDGs in Latin American and Caribbean countries (Universitat Politècnica de Catalunya)○ José Gregorio Noroño Sánchez: Renewable energies and the transformation of labor dynamics in Latin America (Universidad del Sinú)○ Maria Victoria Longhini: Environmental quality and sunshine in urban enclosures and facades. Evaluation of solar radiation collection potential in cities (Universidad Nacional de Tucuman Argentina)○ Sofía Nobili: Bioremediation of soil contaminated with hydrocarbons using local organic materials and earthworms (Instituto de Desarrollo Tecnológico para la



	<p>Industria Química – CONICET - UNL)</p> <ul style="list-style-type: none">○ Jorge David Bravo Villegas: Development of a methodology to locate the intertropical convergence zone (ITCZ) through post-processing of wind data obtained from the era interim data archive (Escuela Politécnica Nacional)○ Pablo de la Vega: The causal effect of external debt on greenhouse gas emissions (Universidad Nacional de La Plata)○ José Rolando Dupuy Parra: Use of biomass as a renewable source of energy (Centro de Aplicaciones Tecnológicas para el Desarrollo Sostenible) <p>Comments:</p> <ul style="list-style-type: none">○ Dr Félix García Lausín – Coordinator of the Iberoamerican Space of Knowledge, Ibero-American General Secretariat (SEGIB)
<p>17:15-18:25 (CET)</p>	<p>Thematic Session 8: Climate, Environment, Natural Resources (II)</p> <p>Moderation:</p> <ul style="list-style-type: none">○ Anna Barrera Vivero – Senior Programme Manager, EU-LAC Foundation <p>Presentations:</p> <ul style="list-style-type: none">○ Rosalía Andrade Medina: Sustainable development of coastal communities through blue carbon initiatives in the south of Mexico (Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional)○ Graziela dos Santos Paulino: Production of active and biodegradable food packaging from agricultural wastes (Universidad Federal de Viçosa)○ Luis Ernesto Núñez González: Biopolymers - Solution to plastic pollution? (Universidad del Valle de Guatemala)○ Carolina Vargas Vanegas: Providing a fair and efficient mechanism of water resources based on a cooperative game generating an alternative life for the people (Corporación universitaria Minuto de Dios UNIMINUTO)○ Melisa Jabif: Water conflicts in a pandemic context: Collective construction of responses through community infrastructures (Universidad Nacional de Tucumán; CONICET)○ Ricardo Andrés Aladino: The commodification of water as a source of socio-environmental conflict in Mendoza during December 2019 (Universidad Nacional de Cuyo) <p>Comments:</p> <ul style="list-style-type: none">○ Prof. Daniel Antenucci – Professor of Physiology, Faculty of Exact and Natural Sciences, Independent CONICET Researcher, Director of the Physiological and



	Behavioural Ecology Group, Institute of Marine and Coastal Research
18:30-19:40 (CET)	<p>Thematic Session 9: Epistemology of Science and Research Practice</p> <p>Moderation</p> <ul style="list-style-type: none">○ Diego Durán Cruz – Programme Manager, EU-LAC Foundation <p>Presentations:</p> <ul style="list-style-type: none">○ Jonathan Ezequiel Aguirre: Higher Education and the academic profession in Argentina: An interpretative study on the expansion of national graduate education in the first decades of the 21st century (Universidad Nacional de Mar del Plata; CONICET)○ Darby Darwin Gutierrez Guevara: Problems of institutionalism in research practice and the behavioural sciences (Centro de Estudios e Investigaciones en Aprendizaje y Conocimiento Humano de la Universidad Veracruzana)○ Romina Rosciano Fantino: Towards a methodology with a gender perspective in research in the field of the visual arts in Argentina (Universidad de San Pablo Tucuman) <p>Comments:</p> <ul style="list-style-type: none">○ Dr Adrián Bonilla – Executive Director, EU-LAC Foundation

17 March 2022	
16:00 - 17:10 (CET)	<p>Thematic Session 10: Learning and Teaching (I)</p> <p>Moderation:</p> <ul style="list-style-type: none">○ Angie Paola Florez Muñoz – Universidad Nacional de Colombia <p>Presentations:</p> <ul style="list-style-type: none">○ Wanessa Do Bomfim Machado: Video lessons in (post)pandemic times: an analysis of BioSciences professors' professional identity through their social representations (Universidade Federal do Rio de Janeiro)○ Otto Henrique Silva Ferreira: Proposal of constituent elements of transdisciplinarity in English Language and Musical Language activities (Universidade Estadual de Londrina)○ James Manuel Pérez Moron: Virtual Experiential Learning-VEL in Business



	<p>Schools in Latin America: Case studies and best practices (Universidad Tecnológica de Bolívar)</p> <ul style="list-style-type: none">○ Jennifer Andrea Venegas Espinoza: Design of inclusive and gender-sensitive educational resources developed under a collaborative work logic (Universitat de Barcelona)○ Pedro Murilo Gonçalves de Freitas: Developing international alternatives of hands-on learning in Brazilian Higher Education: Topics for a Portuguese handbook of projects in architectural heritage (Universidade Federal de Sergipe) <p>Comments:</p> <ul style="list-style-type: none">○ Dr Adrián Bonilla – Executive Director, EU-LAC Foundation
<p>17:15-18:25 (CET)</p>	<p>Thematic Session 11: Learning and Teaching (II)</p> <p>Moderation:</p> <ul style="list-style-type: none">○ Karelia Yhomira Mamani Zapata – Universidad Nacional de San Agustín <p>Presentations:</p> <ul style="list-style-type: none">○ Ana Milena Morales Sossa: Educational modalities and Higher Education: Towards the construction of a didactic conception (Universidad Nacional Abierta y a Distancia)○ Sylvana Mariella Valdivia Cañotte: Inverted learning for the current challenges of university education: An analysis based on a literature review (Pontificia Universidad Católica del Perú)○ Laura Bibiana Quevedo Padilla: Literature review on the impact of internationalisation models of the curriculum in Higher Education Institutions (Universidad Antonio Nariño)○ Cristian Fernan Muñoz Muñoz: Reflective educational practices and the Burnout syndrome in teachers (Corporación Universitaria Minuto de Dios UNIMINUTO)○ José Antonio Taquíá Gutierrez: Stimulation of numerical skills in children with visual impairments using Image Recognition (Universidad de Lima) <p>Comments:</p> <ul style="list-style-type: none">○ Prof. Mónica Marquina – Member of the Board of Directors of the National Commission on University Evaluation and Accreditation (CONEAU), Independent CONICET Researcher Argentina, Adjunct Professor of the Faculty of Philosophy and Letters of the University of Buenos Aires in Educational Policy and in charge of the subject Comparative Education



<p>18:30-19:40 (CET)</p>	<p>Thematic Session 12: Agriculture and Food Security</p> <p>Moderation:</p> <ul style="list-style-type: none">○ Carolina Torres – Universidad Nacional del Cuyo; CONICET <p>Presentations:</p> <ul style="list-style-type: none">○ Santiago Henao Galeano: Smart Agriculture: Sustainable response to the needs of the fields of Sucre-Colombia (Universidad Pontificia Bolivariana)○ Diana Beatriz Bravo Benavides: Resilience of agricultural systems (Universidad Técnica Particular de Loja)○ Marina Teodoro: The multiplicity of agrochemical patents: Regulatory perspectives of their use in pesticides and the incidence of cancer in the São Patrício Valley (Universidade Evangélica de Goiás)○ Edithe Rodrigues Neta: The impact of agroecological farmer’s market on the life and academic-citizen formation of young growers in the state of Paraíba (Northeast, Brazil) (Universidade Federal da Paraíba)○ Natalia Restrepo Toro: Women in Food Sovereignty (Corporación Universitaria Minuto de Dios UNIMINUTO) <p>Comments:</p> <ul style="list-style-type: none">○ Prof. Bernardo Rivera Sánchez – Department of Agricultural Production, University of Caldas, Colombia
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18 March 2022

<p>18 March 2022</p>	
<p>16:00 - 17:10 (CET)</p>	<p>Thematic Session 13: Culture and Traditional Knowledge</p> <p>Moderation:</p> <ul style="list-style-type: none">○ Rosse Marie Esparza Huamanchumo – Universidad San Ignacio de Loyola <p>Presentations:</p> <ul style="list-style-type: none">○ Edwin Rubio Medina: New ethics of human rights that allows the recognition of the subjectivity of non-human entities, especially the sacred places of indigenous peoples (Universidad del Sinú)○ Perla Dayana Massó Soler: Cultural governance and cooperation between cultural capitals in Latin America and Europe (Universitat de Barcelona)○ Aylén Aviles: The systemic conception of cultural institutions - Museums and



	<p>project dematerialization as a result of the incorporation of new audiences and digital and analogical territories in pandemic: A review from the concept of entropy (Universidad Nacional del Litoral)</p> <ul style="list-style-type: none">○ Oriana María Martinelli: First research experiences in the identification of landscape resources in Huacalera, Quebrada de Humahuaca, World Heritage (Argentina) (Universidad Nacional de Tucumán)○ Carlos Augusto Conde Gutiérrez: The Impact of the European Regulation 511 /2014 on the implementation of the Nagoya Protocol on Access to Genetic Resources and Benefit Sharing on the use of Traditional Knowledge of Local, Indigenous and Afro Communities in the framework of the Andean Community (Universidad Externado de Colombia)○ Joel David Montenegro Lanza: Agenda for intercultural life (Universidad de las Regiones Autónomas de la Costa Caribe Nicaraguense) <p>Comments:</p> <ul style="list-style-type: none">○ Dr Beatriz Peluffo – Dean of the Faculty of Education Sciences, Universidad de la Empresa, Coordinator of the Science, Technology and Innovation Reflection Group and member of the Vocational Training Group FAP-ALCUE
<p>17:15-18:55 (CET)</p>	<p>Presentation of Networks and Collaborative Projects</p> <p>Moderation:</p> <ul style="list-style-type: none">○ Richar Norman Gómez – Universidad Metropolitana de Ciencias Tecnologías y Educación <p>Presentations:</p> <ul style="list-style-type: none">○ Aurora Lechuga Rodríguez: Network of Young Researchers Kairós○ Josefina Dib / Victoria Guglielmotti / Carolina García Díaz: German-Argentinean link of young materials researchers○ Daniel Alejandro Rossit: Iberoamerican Industrial Network 4.0. / Red Iberoamericana de Industria 4.0.○ José Ramón Sabogal Hernández: Erasmus Students Network (ESN)○ Zully Johana Rodríguez Parra: Society of Doctors and Researchers of Colombia (SoPhI)○ Carina Diocelyn Meza Ramón: Research Centre for International Affairs (CENTRA)○ Fernando Gregorio Espinoza: Research Network on Crops of Economic Importance in Ecuador (REDICIE)○ Daniela Ruiz Urrea: ‘Semillero’ of literature research: Women and Literature○ Juan José García Rebollo del Río: International Centre for Animal Law and Policy (ICALP)



	<ul style="list-style-type: none">○ Daniel Calbino Pinheiro, Gabriela Moreira Moreira Lima: Fake News and Pandemic Network○ Javier Rojas Segura – SME Digital Transformation Network - Costa Rica○ Natalia Restrepo – Higher Education and Gender Equality Network
19:00-19:45 (CET)	<p>Dialogue among participants about common interests and possible future collaborations</p> <p>Moderation:</p> <ul style="list-style-type: none">○ Dr Anna Barrera – EU-LAC Foundation <p>Proposals:</p> <ul style="list-style-type: none">○ Carlos Emilio Orellana Fantoni: Creation of an international dataset collecting the testimonies of young EU-LAC researchers (Escuela Superior Politécnica del Litoral)
19:45-20:00 (CET)	<p>Closing Session</p> <ul style="list-style-type: none">○ Dr Anna Barrera – Senior Programme Manager, EU-LAC Foundation○ Elizabeth Colucci – European University Association (EUA)○ Dr Oscar Domínguez González – Executive Director of the Colombian University Association (ASCUN), President of the Board of the Latin American and Caribbean Space for Higher Education (ENLACES)

March 14th, 2022 - Opening Session

The event began with the words of greeting of Dr **Anna Barrera**, Senior Programme Coordinator of the EU-LAC Foundation, and organiser of the EU-LAC Young Scientists' Networks Days 2022.

Next, Dr **Adrián Bonilla**, Executive Director of the EU-LAC Foundation, opened the inaugural session of the Conference recalling the objective of the event: providing a space for people who are working as researchers to meet and develop relationships both personally and on behalf of academic networks and civil society. The Executive Director of the Foundation recalled the need to promote new opportunities in relation to academic cooperation between the European Union (EU) and Latin America and the Caribbean (LAC). This, given that one of the main goals of the EU-LAC Foundation is to promote connections between governments, international organisations, and LAC and EU companies. Dr Bonilla also stressed that during the Networks Days a space would be promoted where young scientists and their organisations could generate ideas about the future of the EU-LAC common higher education space, and where new networks and partnerships between the two regions would be built. Finally, he offered words of thanks to all the organisations that supported the unfolding of the conference.

Consequently, **Claudia Gintersdorfer**, Head of the Americas Unit of the European External Action Service, echoed her welcoming remarks, highlighting the importance of education and research to meet the objectives set out in the common agenda of the EU and LAC, which focuses on a sustainable recovery, socially inclusive, and where digitalisation has a relevant role. Last June, the EU and LAC countries adopted the Strategic Roadmap 2021-2023 for the implementation of the Brussels Declaration and the EU-CELAC Joint Initiative for Research and Innovation (JIRI), which meant an important step in bi-regional cooperation in an area in which - previously - cooperation was focused merely on the bilateral level. Claudia Gintersdorfer also mentioned that the European Union is the destination of more than a third of LAC students who migrate outside of their region to pursue higher education studies.

Moreover, Claudia Gintersdorfer highlighted that EU research programmes, such as Horizon 2020, have benefited numerous LAC researchers, with contributions to organisations and entities in LAC being signed for a total of more than 60 million euros. Likewise, the Global Gateway, the European investment platform abroad, was recalled, by which the EU will cooperate with Latin America in matters of sustainable development, green energy, research, digitalisation, among other areas. Finally, some examples of specific projects that the EU has carried out in cooperation with LAC related to research, higher education, and digitalisation were mentioned. One of the most important recent projects is BELLA, the project behind the transatlantic internet network connecting Latin America, through Brazil, with Europe, through Portugal. This project aims to improve connectivity especially for LAC's research and innovation centers, connecting around 12,000 researchers and scientific institutions in the regions, and allowing researchers to download data sixty times faster over the next 25 years. Another example of cooperation in the scientific field is that of the Copernicus Centers that are going to be inaugurated in Panama and Chile, which will allow satellite images to be obtained more quickly and efficiently. However, Claudia Gintersdorfer also mentioned the challenges that both



regions have faced in relation to the impact of the Covid-19 pandemic on education and research systems. The LAC region was the one where students lost more days of education due to preventive lockdowns. It is also relevant to note that the region has considerably lower employment rates for women and with lower pay than for men. In this way, Claudia Gintersdorfer concluded by highlighting the importance of investment in education and research, hoping that the conference will constitute a significant step in the strengthening of cooperation between young scientists from both regions.

For his part, Ambassador **Pablo Grinspun** began his speech by highlighting the importance of the EU-LAC Foundation in promoting bi-regional dialogue towards the development of the Action Plan of the leaders of both regions. Ambassador Grinspun stressed the relevance of the Young Scientists' Networks Days and encouraged attendees to participate actively during all the days, highlighting the possibility of creating connections and concrete proposals that will be made in relation to bi-regional cooperation in research, technology and innovation. He also referred to the JIRI Roadmap– currently underway – through which scientific cooperation between the two regions is promoted, and an ambitious bi-regional work plan about education and scientific research has just been approved. One of the objectives of this work plan is to promote research to increase the export of services and scientific innovation in LAC. Thus, in order to promote sustainable and socially inclusive development that leaves no one behind, investment in research and development is of vital importance. Finally, Ambassador Grinspun stressed the need for the results of research carried out by young scientists to be considered by decision-makers.

Thematic Session 1: Gender Perspectives in (Higher) Education and Sciences

Name(s), Last name(s) of speaker(s)

Leila Slovacek; Maria Rocio Lazaletta; Maria Solange Noblia

Title of the presentation: Gender (in)equality in the academic and scientific field from the recovery of experiences as women, research fellows and social workers at the National University of Mar del Plata

Abstract

We propose to reflect on our academic trajectories as women, social workers, and researchers, recovering our experiences within the framework of the Research Grants of the National University of Mar del Plata, Argentina. From the contributions of the decolonial, Latin American, feminist and (in)disciplined perspective, we seek to expose gender inequalities in the scientific field, taking up those epistemological foundations raised by Latin American feminist researchers who precede us. We also analyse the implications of this colonial domination within the field of research in Social Work, a discipline that the modern-colonial-patriarchal system has legitimised as subalternised within the Social Sciences.

Introduction



In This presentation we propose to reflect on our academic and personal trajectories as women, social workers, and researchers at the National University of Mar del Plata, recovering the contributions of the decolonial, Latin American and feminist perspective, from the (in)discipline.

It is essential for us to position ourselves from the decolonial option for cooperation between Latin America and the Caribbean and the European Union, since it implies approaching from a situated knowledge, recognising the complexities and diversities that are politically conjugated in each territory and, in turn, rethinking the insertion of territories at a global level. Our positioning from an epistemic disobedience proposes a transformative power that opens spaces to produce knowledge. Others, from a *sentipensar-hacer* (lit. thinking-feeling-doing) located in science.

The results of this analysis can contribute to strengthening the relations between actors in both regions in terms of gender (in)equality in the scientific field, since the social location that Latin American women researchers occupy in science in terms of intersecting systems of oppression is evident.

Development of main ideas

Within the Social Sciences, research has been coloured by a modern/colonial androcentric logic, configuring a "neutral" researcher¹, who analyses and describes an "objective" reality on the part of an adult, white and rational male. In this way, the institutions created and legitimised by men justify the lack of indispensable conditions for the rest of the subjects to participate in them. Since the contributions of Diana Maffía (2006), we maintain that institutions deny women researchers and scientists rationality, logical capacity, abstraction, universalisation, and objectivity. Women in the sciences are attributed conditions that detract from epistemic values, such as sensitivity or subjectivity. In this sense, hegemonic science implants reason, underestimating emotion as a form of validation of knowledge. Patricia Hill Collins (2000) on the other hand, argues that the presence of emotion validates the argument. In the words of the author, "emotion indicates that the speaker believes in the validity of an argument" (Collins, 2000, p. 263).

The coloniality of knowledge hides at its center, not only the (in)equity of gender within science, but also a notion of race, bodies, and landscapes where those bodies inhabit that are racialised from processes such as looting and dispossession of the populations of Latin America.

We understand that this coloniality sustains Eurocentrism by producing a hierarchy of knowledge, determining its legitimacy and circulation, in addition to imposing the "universality" of male, white, heterosexual voices, from central countries, upper economic class, hard disciplines, violating the intellectual discourse of women, the LGBTTTIQ+ collective, subalternised masculinities and racialised bodies.

¹ In this article we adhere to the use of inclusive language approved by the Ordinance of the Superior Council No. 1245/19 of the National University of Mar del Plata. In this sense, language variations will be used to contribute to the Social Sciences from an inclusive and non-binary language. That is why, in the development of our work, there will be feminine, masculine, "x", use of the "e", bars of he/ she, among other forms that summon to be read and encourage a deconstruction that, from our feminist militancy, we believe should be reflected in language.

Following Patricia Hill Collins (2000) we can show that intersectionality is constituted as a way of understanding social location in terms of intersecting systems of oppression. The author understands the intersectional perspective as an analysis that affirms that the systems of race, social class, gender, sexuality, ethnicity, nation, and age mutually form the construction of the characteristics of the social organisation in which knowledge is legitimised, which shapes our trajectories as women researchers in and from Latin America.

Social Work as a discipline has not been exempt from this logic, since it has been influenced by the North American and European currents, which view it as a disciplinary field of the Social Sciences (María Lorena Molina, 2012), given that it was historically instituted as a subordinate discipline, due in large part to its feminisation and its origins linked to philanthropy and charity (Miguel Miranda Aranda, 2004). When both tensions intersect -subordination and feminised discipline-, we begin to understand the conditioning that research has in our profession.

Assuming that our discipline is also nourished by feminist epistemologies and the epistemology of the South, we agree with Silvana Martínez and Juan Agüero (2017) in taking up the ideas of the situated knowable subject and the political struggle against oppression, the idea of cognitive justice and social justice, the production of knowledge for social emancipation and the notion of epistemic disobedience.

Therefore, it is interesting for us to signify our trajectory as researchers from Argentina, precisely at the UNMDP.

The Federal Law on Social Work No. 27,072, enacted in Argentina in 2014, enables research as a field of intervention, establishing a general and regulatory framework for professional practice throughout the national territory for social workers. Even so, researching in a discipline such as Social Work – considered, historically, in charge of carrying out the so-called "fieldwork" – is a great challenge, and constitutes a deeply political act.

For us, venturing into the field of Research implied several challenges². In addition to gender, another conditioning factor was the requirement of exclusivity, as the only activity paid for researchers. Since many times this income is insufficient. Time is also a fundamental component that differentiates us, men, and women, in dedication within the public sphere. This shows the minority of women in the world of science.

We have challenges, but also opportunities in the field of the UNMDP that meant, and continue to be in large part, the origin of our being able today to recognise ourselves as young women researchers. In terms of Michel Foucault (1982), we were able to build mechanisms of resistance, of liberation, of self-care, generating a space of power that is present in every relationship of non-domination. Since the entry into force of Federal Law No. 27,072 on Social Work, a conversion of power has been carried out in Foucaultian terms. Social Work has built a place from epistemic disobedience, where it tries to produce a break with the logics of subalternity and scientific demarcation imposed by Western-modern-Eurocentric science. That place, following Hill Collins (2000), we understand it as a safe space. These are common spaces in all oppressed groups where their members can express themselves,

² Among them, competing, carrying out very complex bureaucratic procedures, previously participating in research projects, accrediting teaching hours, etc.

apart from the hegemonic or dominant ideology of each culture, with the intention of defining themselves.

We experienced a complex reality, which we were questioning and transforming, through the encounter with others, the collective construction and militancy to achieve a real hierarchy of our discipline. We belong to a generation of empowered women, who were able to weave other possible paths, thanks to the trajectory of previous professionals who knew how to manage-conquer-decolonise spaces in dispute, where they could intervene and investigate to guarantee the full exercise of the rights of all. Thus, we position ourselves from an epistemic disobedience, where we build a transformative power to propose and open spaces to produce knowledge.

Conclusion

From our lived and experiential experiences as women researchers, we understand that the field of research in our discipline has not been exempt from the coloniality of knowledge that permeates the totality of the Social Sciences. Therefore, we seek to recover the contributions of decolonial, Latin American and undisciplined perspectives, which have nourished our theoretical framework and constitute our *locus* of enunciation. In this sense, we maintain that producing knowledge from Social Work constitutes not only a professional commitment, but also an ethical-political responsibility with the emancipation of peoples.

We make visible that the obstacles to building and producing knowledge, the limitation of access to knowledge and the impediments to entering certified institutions, as well as the difficulties in researching in the Social Sciences, account for the greatest restrictions that the hetero-cis-patriarchal and androcentric culture has imposed on women and dissidents.

We understand that the privileged material and symbolic conditions of possibility, present in our training, allowed us to inhabit institutional spaces where our trajectories as research teachers were facilitated.

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Name(s), Last name(s) of speaker(s)

Ana Carolina Brito Menezes; Daniel Magalhães Goulart

Title of the presentation: University and motherhood from the perspective of the Theory of Subjectivity

Abstract

The following paper presents the partial results of a Scientific Initiation research underway by the University of Brasilia (UnB), which aims to understand the subjective processes related to the experience of motherhood in the university context. Thus, from this perspective we assume the Theory of Subjectivity, qualitative epistemology and the Constructive-Interpretative Methodology of González Rey guided by the search for possible articulations between subjectivity, education, and health in the understanding of experiences about motherhood that correspond to what is desired by a Health Promoting University. Institutional model that seeks to promote equity and respect for diversity. In this way, we also seek to explain possible processes of suffering and subjective resources produced with emphasis on gender issues.

Introduction

This work is based on the understanding and importance of the debates on the Movement of Health Promoting Universities (UPS), of which the University of Brasilia (UnB) is a part. Health promoting institutions are characterised by the search for equality and respect for diversity, from teaching, research, management, and extension, beyond their physical space. In addition, they are institutions that contemplate the principles and precepts of health promotion in all its aspects and actions (REBRAUPS, 2018).

According to the research developed by Silva and Guedes (2020), women who experience motherhood as students of a public university encounter a series of difficulties that cannot be condensed as proposed by a UPS. The results show that 78.4% of the participants said they had interrupted the course and 62.2% reported knowing someone who quit for reasons related to motherhood or pregnancy.

In this context, the Theory of Subjectivity acquires heuristic value for the present study, since it allows from a historical-cultural perspective a complex understanding and representation of human processes, offering a basis for thinking about education inseparable from subjective development (Goulart & González Rey, 2016). Similarly, this research uses the Constructive-Interpretative Methodology which is based on Qualitative Epistemology (González Rey, 2005), by understanding the production of scientific knowledge as a constructive-interpretative process, dialogue-based and oriented towards the legitimisation of the singularity as a source for its production.

Based on these assumptions, the ongoing research has the participation of two women, Patrícia and Beatriz (fictitious names), both mothers and undergraduate students of the UnB. For the construction of the information, other studies carried out on the subject have also been considered. Thus, the main objective of the research is to understand subjective processes related to the experience of motherhood in a higher education institution.

Main Section

To understand the experience of motherhood within the UnB, it is important to explore the symbolism of the university's own space in the region. In this sense, the main campus of the institution is in an



economically privileged area of Brasília and in many cases requires the use of at least two means of public transport to access. However, within the university it can only be verified the existence of a room as a place of maternal care, to carry out activities such as breastfeeding.

Therefore, from this information, it is possible to think how the physical space of the UnB plays a role that favours social exclusion, by intensifying the experience of women who are mothers, which, in addition, articulates the dynamics between race and gender. According to the concept of intersectionality proposed by black feminism as a superposition of oppressions (Akotirene, 2019), the experience within the university cannot be read by highlighting a single dimension of the individual.

In the semester in which she had her son, Beatriz looked for subjects that she could finish at home, enrolling in a total of 5. However, when talking to the professors and looking for adaptations to their context, it was suggested that she leave the subjects or return to the university in person shortly after giving birth, which led her to finish the semester with only 2 subjects.

In a conversation we had, Patrícia talks about the role of students in the exclusion suffered by mothers: "And people get so scared when they see a mother in certain spaces that I think if this were so natural and such, how many mothers wouldn't be there in that space as well?"

The experiences of these women are impacted by multiple phenomena, reinforcing what is proposed by the Theory of Subjectivity that the individual and history, culture and society cannot be dissociated (González Rey & Mitjás Martín, 2017).

Likewise, the individuals' subjective productions corroborate some of the conclusions of Rebecca Solnit (2017) on how the exercise of motherhood can represent the exclusion of certain spaces and the questioning of the capacity of women, reducing them to the role of mothers. Therefore, it can be assumed that the experiences not only concern the lack of preparation to receive mothers at unB, but also speak of a culture sustained by the institution and the university community that excludes and disfavours maintaining students who experience motherhood in higher education.

In this sense, there is an economic aid in the UnB aimed at mothers, but it was commented how difficult it is to get it and that it is insufficient for most of the women who need it. This lack of support highlights the vulnerabilities that mothers experience in higher education. Focusing on the economic aspect, Beatriz explains that when she became pregnant, she was in a paid internship, but she only told the company where she worked about pregnancy in the seventh month for fear of losing her job. In addition, women talk about how difficult it is to work after giving birth because of the limited access to nurseries and the need to have someone to take care of their children so that they can work.

In Brazil, by law, pregnant women under an employment relationship cannot be fired, but the internship is not under this regime. The difficulty of reintegrating into the labour market after the birth of children exposes how a social problem intensifies during the graduation period, even more so with the ineffectiveness of the aid proposed by the UnB.

Both participants talk about how the onset of their pregnancies was disturbed by thinking about the difficulties related to motherhood. Patricia reveals that she tried to have an abortion due to the lack of prospects for her future as a mother. However, she also talks about however, she hadn't really thought about becoming a mother until her mother-in-law asked her what she would like to do. The conversation with the mother-in-law about the possibility of being a mother mobilised a set of reflections and subjective productions that culminated in the decision to proceed with pregnancy –

which ratifies the value of dialogue oriented to the emergence of agents and subjects, as defended from the Theory of Subjectivity (González Rey & Mitjáns, 2017).

On the other hand, during the conversations with the participants, it was possible to think of alternatives for the mitigation of the contexts of vulnerability experienced, but that will still be better developed during the research. Some possibilities designed are the implementation of spaces for dialogue, reception, and institutional support, as well as specific university policies that favour the personal and professional development of these mothers.

The fact that these alternatives are thought from the reflections of the participants themselves is related to what the Theory of Subjectivity also proposes that experiences cannot be reduced to the way they are perceived directly, since they imply a complex and continuous dynamic between individual, society, and culture. It is necessary, then, a perspective that considers the complexity of individual and social subjective productions, in their current fragility and permanent possibilities of development (González Rey & Mitjáns, 2017).

The concepts of the Theory of Subjectivity emphasise how experiences cannot be determined a priori, by highlighting the importance of current ongoing research, because from the understanding of subjective productions related to the experience lived by university students associated with motherhood it is possible to propose a set of effective actions that involve different individual and social dimensions involved in this process.

Conclusion

Based on the previous reflections, the analyses that we have produced so far, demonstrate an initial scenario favourable to the achievement of the main objective of this research. In this way, one of the expected results of this work will be to understand the processes experienced by women from their status as mothers during graduation. In this sense, not only to develop the proposed theme, but also as a possibility to think about new institutional, social and even political paths that can contribute to mitigate the difficulties of these women in the scenarios of their training in higher education. Therefore, the development of the research may contribute to the work of the EU-LAC Foundation in the Advisory Committee of the implementation of the "Survey on Trends in Higher Education in Latin America and the Caribbean".

In addition, the analyses developed are also in line with the foundation's desire to promote gender equality and guarantee women's rights. Likewise, the work can contribute to one of the themes of the results expected by the foundation with its strategies, which is the economic empowerment of women and their participation in the world of work. The research being developed has the potential to broaden discussions on the topic of motherhood at university and develop practical actions for social change, exploring new forms of intervention and support for students.

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Forename(s), Surname(s) of the Speaker

Carolina Giordano Bergmann; Miriam Pillar Grossi

Title of the presentation: Female Deans: facing male chauvinism in the highest management position of the Brazilian Federal Institutes

Abstract

This presentation aims to expound the results of the first phase of the doctoral research which investigates gender relations, as well as other intersectional issues that permeate women candidacies, their election process and time as Deans of Federal Institutes of Education, Science and Technology (IFs) from 2009 to 2024. The literature review, the participation in academic events and the initial data collected point out to important subjects that must be considered in this research such as: issues of motherhood, the sexual division of labour, sexism in academic life, in addition to the scissors effect in the scientific field, all of them, discussed in the research from the perspective of a feminist epistemology.

Introduction

One of the points that is important to think about when we discuss this issue of women in administrative positions within higher education institutions is their presence in science. This is because more than 95% of “Brazilian scientific production on international bases is thus due to the research capacity of its public universities” (Moura, 2019). In this way, higher education institutions are the places where Brazilian research mostly takes place and the presence of women in this field also impacts their presence in the administrative positions of these institutions.

This research is in its initial phase, in the stage of data collection and literature review, which has occurred through participation in events on gender and science, reading texts related to the themes of this work. In addition, a survey of data has been carried out on the internet in search of quantitative data on women in administrative positions in the IFs, as well as other data on women in positions of power.

Research themes

This research takes place in the field of studies on gender and science, seeking theoretical support in some themes to think about this relationship. On the topic of women in science/academy, we based ourselves on Miriam Grossi and Catarina Rea (2020), for whom this field of gender and science studies can be divided in 'studies on women in science, their forms of inclusion, participation and visibility'; and 'analysis of feminist epistemologies that contribute to thinking about a new model of science'.

Another important author for this work is Donna Haraway (2009) as she discusses about situated knowledge, the partial perspective and how these are fundamentals to carry out engaged feminist research, which is our proposal in this research. On intersectional issues we are inspired by Kimberlé Crenshaw (2002) who proposes that race and gender discrimination are not excluding phenomena and that it is therefore essential that research take these issues into account. Ilana Löwy's (2020) work is also important because it discusses the obstacles to have parity between men and women in science, in the highest career positions and in the most disputed grant and funding, a phenomenon known as the 'glass ceiling'.

In addition to these topics already listed, we emphasise that this research will need to address the following sub-themes: motherhood issues, care, and science; empowerment and the relationship between women and power; women and politics; feminism and feminist epistemologies.

Fighting for including women in mostly male spaces is not just a matter of human rights. When claiming the presence of women in science, in STEM areas or in more prestigious political and/or administrative positions, it is important to remember that these are not just a demand to attend an identity agenda. Some studies discuss the importance of diversity in making a 'better' science. For Mathias Nielsen et al (2017), gender diversity increases the results of knowledge because it forms smarter and more creative teams, opening possibilities for new discoveries, expanding the points of view of the researchers.

Beyond the importance of women for a diverse science, their participation in leadership positions is a current discussion that is on the agenda of different institutions. This issue is part of the Sustainable Development Goals, agreed upon in 2015, which aim to end poverty, protect the planet, and ensure that by the year 2030 all people will have peace and prosperity. To achieve these standards, 17 goals were defined and the fifth is to achieve gender equality. One of the ways to accomplish this equality is to encourage women to occupy leadership positions. According to UNDP, "only 24 percent of national parliamentarians were women as of november 2018, a small increase from 11.3 percent in 1995". If we consider issues such as race, class and disability, these numbers tend to be even lower.

Some relevant data

During this first year of work, it was possible to collect some data about the number of female deans, campaigns and candidacies and we also carried out field research at academic events that address the issue of women in the scientific field. These events can be divided in the following themes: specific events on women in science; events about gender issues; other events upon diverse themes.

The participation in events articulated with the reading of materials until this moment allowed us to perceive some questions. Below, we list themes that appeared with recurrence in some of the events mentioned above and that are directly related to the theme of this research.

- a) Motherhood in academic life: firstly, it draws our attention to the problematic situation in which mothers are placed by society when, in addition to domestic work, they also develop



other paid activities.

- b) Sexual division of labour and academic career: this second issue refers to the domestic and caring activities that are almost exclusively under the responsibility of women and how much these activities impact their careers.
- c) Scissors effect: the third point is the so-called scissors effect. Although some areas already have a more paritarian presence of women, according to Lucila Sigal (2021) "while more Latin American women graduate than men and there is almost parity of researchers, women account for only 18% of deans at public universities, and in the corporate sector, women account for just 27% of executives", characterising, thus, the scissors effect.
- d) Male chauvinism in academic life: as a fourth point, we present the confrontation with male chauvinism in the academy and in other work environments through the reports of several women who work in these fields.

Numbers related to female deans

The first thing that it is important to highlight is that in the IFs there was an increase of the number of female deans nowadays when comparing with the numbers of 2009, when the IFs were created, on December 30th, 2008. In 2009, of the 38 IFs, only 5 had women occupying the position of deans and in 2021 this number rose to 12.

When we look at all mandates in this same period and considering all 38 IFs, we have a total of 193 mandates, 42 of which (21.76%) were held by women, divided into 15 pro-tempore mandates and 27 elected mandates. In 13 years of existence, women have still not managed to occupy $\frac{1}{4}$ of the mandates of the IFs, which corresponds to a gender gap of 27.81%.

These numbers follow the Global gender gap report 2021 collected data, which analysed the participation of women in the following areas: Economic Participation and Opportunity; Educational Attainment; Health and Survival and Political Empowerment: "the gender gap in Political Empowerment remains the largest of the four gaps tracked, with only 22% closed to date, having further widened since the 2020 edition of the report by 2.4 percentage points" (Crotti et al, 2021, p. 05).

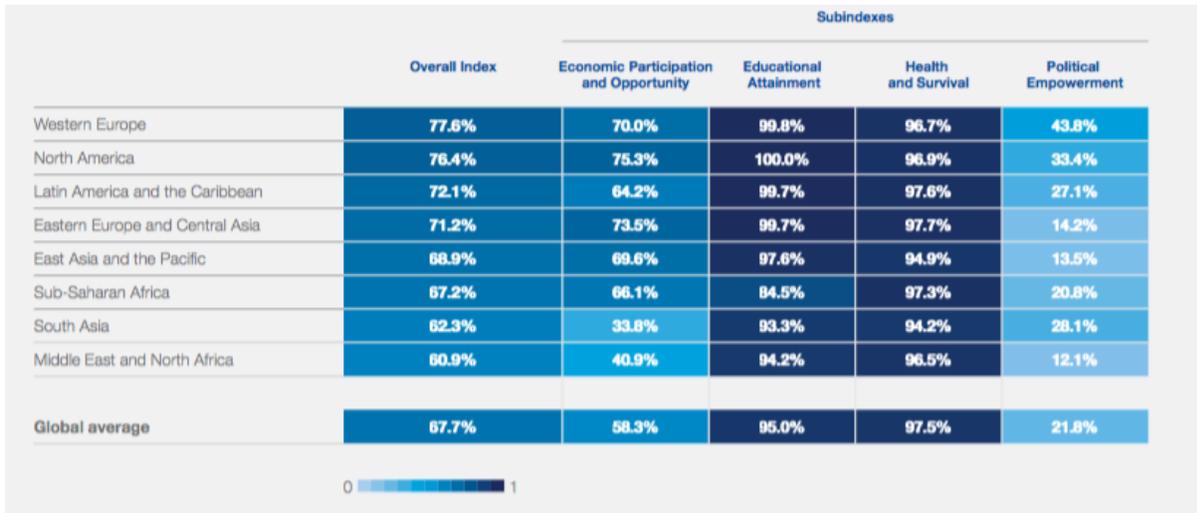


Figure 1: Regional performance 2021, by subindex. Source: Crotti et al, 2021, p. 23

There were 9 IFs that had campaigns for the election of deans and 10 women participated in them during 2021. It is important to highlight that the 2 women elected are, respectively, from the two IFs that had exclusively female candidates: IF Farroupilha and IF de Goiás. In 2022 there will be 6 IFs campaigns to follow up.

Conclusion

During this first period of work, it was possible to reflect on the relationship between gender, science, scientific knowledge production, careers, and power. With the statistical and bibliographic data and the new concepts learned, it was already possible to start the theoretical construction of the research and a data collection regarding the women elections in the IFs with the aim of deepening the studies on these themes, as well as structuring the rest of data collecting.

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Name(s), Last name(s) of speaker(s)

Rocio Mariel Moltoni

Title of the presentation: Reparation of gender violence in the university space

Abstract

This presentation presents the partial results of the first part of an ongoing research linked to the doctoral thesis itself. Gender violence, action protocols and policies to address them at the National University of Rosario, Argentina, are particularly analysed.

The central objective of the work is based on addressing sexist violence from a paradigm of its "repair", its conceptualisation and what it specifically includes in university spatiality through feminist and narrative-biographical research methodologies.

It is concluded that addressing gender-based violence from a reparative dimension contributes to gender equality in higher education.

Introduction

Although the relationship between feminisms and the Argentine public university has a history of more than a century of existence, in the present, this link is enhanced by the so-called feminist "fourth wave" (Chamberlain, 2016; Figueroa, 2018), a process of intergenerational massification and radicalisation of feminist activism throughout Latin America. Political events such as "Ni Una Menos" and the demands for the legalisation of abortion constitute social and political phenomena with a notable impact on universities (hereinafter, UUNN).

As Rovetto and Fabbri (2021) and Blanco and Spataro (2021) explain, the irruption of feminisms in institutions, and specifically in universities, has acquired characteristics in recent years. The demands of the student, teaching, research, and non-teaching faculty are increasingly focused on feminist demands such as the eradication of gender violence in university spaces, the mainstreaming of the gender perspective in all curricula, the creation of toy libraries or care spaces for family members of those who make up the university community, among many others. In addition, the secretariats, areas, sub-secretariats, among other formats of university management spaces that have designed,

implemented and evaluated gender policies in higher education institutions have increased significantly.

In This presentation, we specifically address the policies linked to addressing gender violence in universities and their reparation based on an ongoing research work located at the National University of Rosario (UNR), Argentina.

Main section

The first regulations in national public universities that seek to regulate the social problem of gender violence in higher education are commonly called "Protocols of action" in this type of cases and were sanctioned around 2014 and 2015. These Protocols, in turn, were progressively accompanied by spaces for the attention of these violences with referents and professionals in charge and later by university management policies of this and other topics related to social relations of gender and sexualities.

Although these Protocols, attention-focus and management spaces constitute an enormous advance in terms of gender equality, a brief evaluation of their operation in the first years of implementation (2014-2018) allows us to observe that there have been neglected or de-hierarchised issues such as "reparation" of those who go through situations of gender violence in Universities. On the contrary, institutional responses to this type of aggression are often largely focused on those who commit the violent acts.

In any case, this is not observed only in the Universities but what has been observed here is that when studying gender violence, the analyses and criminal approaches do not focus on the position of those who suffer them (taking into account their experiences, affections, and what they go through in particular) but victimise and re-aggravate the people aggressed, while those who attack are subjected to a criminal process more associated with the premise of "punishing" than "repairing". This has led to ignorance of the subjectivity of people in the process of recognition, denunciation, and resolution of these violences.

In the research that deals specifically with the protocols and policies of addressing gender violence in the academic space, it has been observed that the concept of "reparation" of sexist violence through the protocols and policies of approach to this type of aggression appears only in a work of the Autonomous University of Mexico (UNAM) of 2019 at the international level, and in the most recent discussions and debates at the national level linked to the processes of reform of the UNR protocols. In any case, for several years, it has focused on the lack of hierarchy of subjectivity and the desire of those who come to consult or denounce in the Catalan care mechanisms (Cagliero, 2018), the "exaggerated" focus on the punishment of sexual harassment in US universities (Lamas, 2018) and the absence of alternative mechanisms to the so-called "formal procedure" of the university courts in the case of the UNAM. At this point, this University precisely proposes mechanisms for the resolution of conflicts of "restorative justice" such as agreements, commitments, among other actions that allow precisely to "repair" the "damaged" people and promote a change of attitude in those who have attacked (Barrera Gutiérrez and Morales Ángeles, 2019).

In the preliminary results of the biographical-narrative interviews from feminist methodologies carried out in our 2021-2022 fieldwork with students, teachers and non-teachers who went through situations of gender violence at the UNR, what could be observed is that "reparation" is expressed in very different ways. Although some narratives are located linked to responses focused on punishment such



as the expulsion of those who exercise violence, collective forms of conflict management also appear (such as the self-organisation of the university community of activities that make this type of violence visible and the damages they produce) or focused on prevention campaigns, improvement of the attention of the cases presented, the non-revictimisation and in the pedagogical training.

This last aspect, from our point of view, is related to the fact that Universities are not penal or punitive establishments, but educational institutions. Where, although it is extremely necessary to improve the mechanisms and policies of attention to gender violence and therefore the rapid resolutions to the conflicts produced, the long-term transformation is closely related to changes in the androcentric ways of understanding society and its institutions. This is linked to the educational training processes that aim more at the prevention of violence, that is, at these events not occurring in the future.

Conclusion

To conclude this work, we can affirm that feminisms and feminists in Argentine universities, but also Latin American and Caribbean universities have been making strenuous efforts in recent years in order to contribute to the reparation of gender violence and gender equality. Management policies linked to gender relations and sexualities are not only increasingly at multiple state levels (municipal, provincial and national), but have been granted year after year greater hierarchy, as is the case of the Ministries of Women and Sexual Diversity or as in the case that summons us, national university bodies with their own resources to develop these policies (in the case of Argentina we are talking about the University Gender Network known as RUGE in the National Interuniversity Council).

In this framework, the Universities have been fundamental in their contribution in research, management, and extension for public policies on gender and sexualities not only in Argentina or our Latin American and Caribbean region, but also for the European Union and all countries of the world.

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Name(s), Last name(s) of speaker(s)

Daniel Botero Guzman

Title of the presentation: Does higher education reduce the gender gap in mathematics?

Abstract

The objective of this work is to measure the gender gap in mathematics from standardised tests in Colombia, which are presented at the end of secondary education and higher education. Data from the Colombian Institute for the Evaluation of Education-ICFES are used corresponding to the results of the Saber 11 and Saber Pro tests. From a fixed-effect model it is found that higher education contributes significantly to the reduction of the gap in mathematics and that this reduction is greater among students who chose careers in Science, Technology, Engineering and Mathematics (STEM) than among those who did not (non-STEM). These results will serve as input to make decisions on education policy, and labour policy.

Introduction

Different research has highlighted the benefits that gender equality can generate from the economic, social, and environmental point of view. These benefits include an increased likelihood of investing public resources in child health, nutrition, and access to employment (Chattopadhyay & Duflo, 2004), increased contribution to the achievement of food security and sustainable livelihoods (Food and Agriculture Organisation of the United Nations, 2011) and the assurance of vital services such as water, sanitation and energy (UN Women, 2014).

In addition to the benefits of gender equality, it has become a moral and ethical imperative (UN Women, 2014) that has been inscribed within the Sustainable Development Goals. Its full achievement implies that it is achieved in different areas. Thus, gender equality in the field of education is fundamental as it can have important effects on equality in employment, health, and nutrition.

However, some studies (Hyde & Linn, 1986; Goldin, 1994; Hausmann, Tyson & Zahidi, 2008) highlight gender differences in learning test results. The idea that men perform better than women in mathematics has been prevalent (Wilder & Powell, 1989; Willingham & Cole; 1997; Fryer & Levitt, 2010; OECD, 2015). This difference by gender has important implications for occupational choice, the salaries they receive (Paglin & Rufolo, 1990) and with the low representation of women, in most industrialised countries, in academic disciplines of science, technology, engineering or mathematics (Peri & Anelli, 2012; Cecci & Williams 2007).

According to the results of the PISA tests, in 2015, Colombia ranked 19th regarding the gender gap in favour of men, in the results of mathematics; while the 2018 Global Gender Gap Index ³ (World

³ The Global Gender Gap Index in English.



Economic Forum, 2018) placed it in 40th place, among 149 countries, where in the first places are the countries with the highest levels of gender equality. This shows that there is still much room for improvement regarding gender equality in the country.

Main ideas

In all models the female variable is significant at 1% and her sign was negative. All models have a good fit. In general terms, it is observed that the educational level of the father and mother has significant effects (in general) on the performance of their daughters and sons in mathematics. It is striking that the education of the father is completely significant, and that the higher the educational level compared to not having a degree of formal education is positive. In the case of the mother, the coefficient is positive and significant at high levels of training, as is the case of having either complete or incomplete professional education.

Regarding the strata, the coefficients are positive and significant, which implies that the greater the socioeconomic stratum (as a proxy for better economic capacity) there could be a smaller gap. However, the effect becomes stable and loses significance in some specifications in the upper strata. In general, stratum 4, which could be categorised as upper middle class, is the one with the highest coefficient. Likewise, the strata coefficients in STEM areas are higher than non-STEM areas.

In specifications 7, 8 and 9, the student's performance in his Saber 11 test was used as an explanatory variable of the performance in the Saber Pro exam. It is observed that the R square improved with respect to specifications 4, 5 and 6, which gives evidence that the performance obtained in the Saber 11 exam does provide relevant information to the explanation of the results in the Saber PRO exam. Performance at the end of high school has a positive and significant effect on the exam at the end of college. Although the coefficient is higher in non-STEM areas than in STEM.

On the other hand, the gap obtained in the Saber 11 exam is greater than that of the Saber Pro exam, which indicates that the passage through higher education does have a positive and significant effect on reducing the gap in mathematics. This is supported by the fact that the gap went from -0.433 (which implies that the average results of women are 0.431 standard deviations below those of men) to -0.392 in specification 4 and -0.251 if 7 is considered.

Regarding the advance or setback in the gap of students in STEM areas compared to non-STEM areas, the gap decreases in both cases after the passage through higher education but does so in a greater proportion in STEM areas. The gap in STEM areas decreased by 0.075 if specification 5 is considered and 0.211 with specification 8. While in non-STEM it decreased 0.035 if specification 6 is considered and 0.149 with specification 9.

The results presented so far coincide with what has been found in other studies (Abadía & Bernal, 2016; Dickerson, McIntosh & Valente, 2015; Guiso, Monte, Sapienza & Zingales, 2008) which show that after controlling for observable characteristics the gap in mathematics, against women, persists.

Conclusion

The gender gap found in the Saber 11 and Saber pro exams, and above all, the fact that this gap is stronger in 11 in people who choose STEM areas is important for public education policy decisions. One conclusion that emerges is that men who choose STEM areas are much better at math in 11 than those who choose non-STEM areas, and that in addition, they are much better than their peers in both areas.

Linking this with the literature review carried out, it is likely that as shown by the study by Niederle & Vesterlund (2010) women will find it more difficult for competitive environments such as an exam or that they have fewer expectations in their results and therefore the gap is wider.

However, the above results could also reveal another effect and that is that although women do well, they apply less to careers in STEM areas due to different gender biases that have determined their trajectory. This is evidenced in the fact that the gap of those who follow non-STEM careers is lower and especially in the importance of performance in the Saber 11 exam as an explanatory of the one obtained in the Saber PRO, that is, at the end of school there are already determinants of the future gaps in the life trajectory.

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Forename(s), Surname(s) of the Speaker

Kevin Clidoro; Emeka Okoye; Carolina Trichet Paredes

Title of the presentation: Reducing the gender gap in STEM Higher Education through bilateral EU-LAC cooperation and the W-STEM project

Executive Summary⁴

The European Union and Latin America and the Caribbean (EU-LAC) bi-regional cooperation has been at the forefront of supporting programmes to close the gender gap in the Science, Technology, Engineering, and Mathematics (STEM) programmes in higher education. The W-STEM Project, which is part of the Erasmus+ Programme, aims to improve the attraction, access, and guidance of women in STEM higher education in Latin America. This policy brief presents the extent and causes of gender inequality in STEM higher education in the two regions. Through semi-structured interviews, the authors were able to establish the severity of the problem and draw from the perspectives of institutional stakeholders, students, and researchers. To further support the achievement of the W-STEM Project's goals, the bi-regional cooperation is encouraged to advocate for its extension and expansion.

Introduction

The EU-LAC bi-regional cooperation has been supporting the Erasmus+ Programme, which is an EU-led exchange academic programme that sets out to improve the mobility of individuals, among other key action points. The W-STEM Project, which is part of the Erasmus+ Programme, is a three-year (05/01/2019 to 14/01/2022) endeavour that aims to improve the strategies and mechanisms of attraction, access, and guidance of women in higher education in Latin America (W-STEM Project, n.d.). It is coordinated by the University of Salamanca through the GRIAL Research Group. The W-STEM Project currently organises and implements various activities and events through its 15 partner universities⁵. These include webinars, roundtable discussions, conferences, and the establishment of local chapters to promote the presence and participation of women in STEM higher education.

⁴ Please reach out to Mercedes Bustán at mercedes.bustan_japon@uni-erfurt.de for the full version of the policy brief.

⁵ Oulu University – OULU (Finland); Politecnico di Torino – POLITO (Italy); Technological University Dublin – TUD (Ireland); Northern Regional College – NRC (UK); Tecnológico de Monterrey – ITSM (México); Universidad de

Gender inequality in STEM higher education in LAC is very evident in the student population and teaching staff of engineering programmes. A study by Contreras-Ortiz et al. (2020) revealed that only 28% of the total population in engineering, manufacturing and construction, and information and communication technologies (ICTs) programmes in nine universities⁶ in Latin America in 2018 are female. Meanwhile, female students in the natural sciences, mathematics, and statistics programmes comprised 51.6% of the total student population.

Although the EU region has considerably mature procedures and regulations in addressing gender inequality in higher education (Morales, Carrión, & Jaramillo, 2020), women remain underrepresented in STEM education and careers in the region (Rhawi, 2021). The challenge of closing the gender gap in STEM education and careers is not only a matter of justice and creating equal opportunities in the labour market, but also of intensifying the region's scientific and technical development and creating benefits for society (*ibid*, 2021). According to the European Institute for Gender Equality (2021), increasing the participation of women in STEM subjects would contribute to an increase in EU GDP per capita by 2.2% to 3.0% in 2050.

Causes of Gender Inequality in STEM Higher Education in the EU-LAC Regions

According to UNESCO (2017), the factors influencing girls' and women's participation, achievement, and progression in STEM education stem from the individual, family and peer, school, and society levels and overlap with each other and interact in complex ways.

The interviews conducted with female STEM students revealed that comments adhering to traditional gender norms, bias, and stereotypes related to STEM education and careers happen at all levels. According to Stakeholder 2, this is evidently manifested in the patriarchal disdain and *machista attitude*⁷ experienced by female STEM students at the University of Chile. Most of the students did not particularly experience difficulties in enrolling in a STEM programme, since there are existing gender equality policies that guide enrollment decisions in some universities, as described by Stakeholder 1. However, almost all students said that they personally heard some of their family members, classmates, and even school personnel, including professors, making comments related to traditional

Guadalajara – UG (México); Universidad Técnica Federico Santa María – UTSM (Chile); Pontificia Universidad Católica de Valparaíso – PUCV (Chile); Universidad Tecnológica de Bolívar – UTB (Colombia); Instituto Tecnológico de Costa Rica – ITCR (Costa Rica); Universidad de Costa Rica – UCR (Costa Rica); Universidad Técnica Particular de Loja – UTPL (Ecuador); and Universidad Técnica del Norte – UTN (Ecuador)

⁶ Universidad del Norte (UNINORTE) – Colombia; Universidad Tecnológica de Bolívar (UTB) – Colombia; Tecnológico de Monterrey (ITESM) – México; Universidad de Guadalajara (UDG) – México; Universidad de Costa Rica (UCR) – Costa Rica; Instituto Tecnológico de Costa Rica (ITCR) – Costa Rica; Universidad Técnica del Norte (UTN) – Ecuador; Universidad Técnica Particular de Loja (UTPL) – Ecuador; and Pontificia Universidad Católica de Valparaíso (PUCV) – Chile

⁷ By patriarchal disdain, we mean the disrespect and rude comments directed towards women, who are studying STEM courses. For example, such unsavory comments come off as dismissing the potential of women to pursue an engineering degree/math-inclined courses, and perhaps telling them to return to their traditional homemaking duties. By machista attitude, we refer to the male hegemony of the study environment, mostly related to gender stereotypes (Villaseñor, Celis, Queupil, Pinto, & Rojas, 2020).



gender norms, biases, and stereotypes that impacted their decision to enroll in a STEM programme. For instance, Student 5 shared that while her parents were supportive of her enrolling in a STEM programme in university, her grandmother specifically told her that an engineering degree is intended for males. When deciding to enroll in a STEM programme, Student 2 heard comments like: “You are trying technology. That is too hard for you. Why don’t you try other things?”.

Conclusion and Recommendations

The W-STEM Project recognises that the sustainability of the project lies in the strengthening of partner universities’ capacity to co-create and implement strategies and mechanisms to increase female applications and enrollment. That said, the authors recommend to the EU-LAC bi-regional cooperation three key action points to further support the achievement of the W-STEM Project’s goals.

1. Extend and expand the W-STEM Project

The EU-LAC bilateral cooperation is recommended to support the expansion of the W-STEM Project to include as many partner institutions and universities in the EU-LAC regions as possible. Now, only four countries in Europe and five countries in Latin America are part of the project. There is no partner institution from the Caribbean, which makes the case for expansion even more compelling considering the severity of the problem in these regions. To achieve this objective of expansion, the current timeframe of the project should be extended by supporting another funding period. Extending the project is important because achieving its goals requires time.

2. Further support efforts related to increasing female STEM applicants and enrollees in higher education institutions

Female STEM students are more likely to leave school than their male counterparts, in part because they lack similar role models (Herrmann et al., 2016). The lack of female role models, such as professors, in higher education institutions, was a recurring issue mentioned in the interviews with female STEM students. Institutionally, thought should be given to increasing the presence of female mentors to increase female student enrollment and retention rates in STEM programmes. For instance, a qualitative study of a mentoring programme of the Centre for Gender and Science at the Institute of Sociology of the Czech Academy of Sciences found that it is crucial to provide female students with positive female role models (Cidlinská, 2019).

3. Co-create with stakeholders a project component that addresses gender norms, bias, and stereotypes at the family and peer levels

Gender inequality, particularly young girls’ engagement, interest, enjoyment, and future career aspirations, in STEM education, is shaped by traditional gender norms, bias, and stereotypes (UNICEF, 2020) that permeate across the plethora of factors, mostly at the family and peer levels. This points to the importance of including the family members of a young girl in programmes, such as the W-STEM Project. That said, the EU-LAC bi-regional cooperation is recommended to support the co-creation of a component within the W-STEM Project that focuses on breaking the traditional gender norms, bias, and stereotypes that exist at the family and peer levels. In coming up with a new project component, it should be ensured that the process includes young male and female students, their family members, and their peers.



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Thematic Session 2: Sustainable Economic Development, Entrepreneurship and Innovation

Forename(s), Surname(s) of the Speaker

Jorge Armando Luna Amador

Title of the presentation: Analysis of Innovative Performance in Companies Belonging to the Service Sector in Colombia

Abstract



This research proposal seeks to analyse the innovative performance of companies belonging to the service sector in Colombia. For this, non-parametric quantitative (DEA) and econometric (PROBIT) methods will be used to measure innovative performance and establish the determinants and barriers to innovation faced by companies in the service sector in Colombia. This is an investigation that hopes to contribute to the Latin American literature on the determinants of innovation in the service sector, since this type of studies have focused mainly on the manufacturing sector. Finally, it is expected to provide relevant inputs to the entities responsible for designing public innovation policies in Colombia.

Introduction

Today, innovation is one of the main determinants of competitiveness in both developed and developing economies. For this reason, governments and companies around the world are in a constant process of improving products, services and / or processes through innovative initiatives that allow them a competitive and long-term positioning in increasingly demanding and changing markets (Adjapong et al., 2022).

Due to the above, companies are becoming increasingly concerned with improving their innovative performance, which has become one of the main focuses of economic research (Wen et al., 2022). In this sense, an extensive literature has been developed on those factors that affect the innovative performance of organisations; some of these factors are government support (Wen et al., 2022), intellectual property protection (Campi et al., 2020), government ideology (Wang et al., 2019), company size (Prokop & Stejskal, 2019), employee education (Wen et al., 2022), funding sources (Divisekera & Nguyen, 2018), among others.

When conducting a preliminary review of the literature on the subject, it has been observed that the development of this has focused mainly on the secondary sector of the economy, especially in the manufacturing industry, relegating the tertiary or services sector, which has been constituted in recent years as the sector with the greatest dynamism in international trade and with greater economic growth in the main economies of the world (World Trade Organisation, 2019). In fact, since 2011, it is estimated that the growth of international trade in services has grown on average by 3% per year while international trade in goods has grown on average by 1% annually. Additionally, the services sector has gone from having a 9% share in 1970 to a 20% share almost 50 years later in global international trade (World Trade Organisation, 2019).

In general terms and, according to what Owusu et al. (2020) have proposed, it can be said that, due to its rapid expansion in developed, developing and emerging economies, the service sector can replace the manufacturing industry as the main engine of productive growth worldwide.

In the Colombian context, a situation like that perceived in the global context is presented, where the literature on the determinants that affect the innovative performance of organisations is focused mainly on the manufacturing sector (Turriago, 2015). Here we can cite the works of Juliao & Pineda (2019), Turriago et al. (2015) Padilla (2014), Villarreal et al. (2014), Manrique & Velásquez (2011), among others who also focus their attention on the manufacturing industry.

The importance of the sector and the need for more scientific literature for service companies provides an ideal scenario to start developing research focused on the determinants of innovative performance in the service sector. It is here that this research proposal that seeks to address the innovation



problems that arise in Colombia begins to take relevance and that will be described a little more in detail in the paragraph below.

The Privy Council of Competitiveness & SwissContact (2021) has indicated that, although innovative performance is one of the main sources for increased productivity and economic growth worldwide, in Colombia there are low levels of innovation. In this way, a historical analysis of the Technological Development and Innovation Survey -EDIT- has shown a decrease of about 10% in the percentage of innovative companies between 2010 and 2018.

Considering the needs for improvement in the innovative performance of Colombian companies, exposed in the revised national and international official reports, in addition to the needs identified on the strengthening of the scientific literature related to the determinants of innovative performance in the service sector, this research proposal arises that seeks to address the problem of low innovative performance of companies belonging to the Colombian service sector.

Central Purposes of Research

The purpose of this research is to analyse the innovative performance of companies belonging to the Services sector in Colombia. For this, specific objectives have been established that are:

- Identifying the indicators/variables used to measure innovative business performance.
- Characterising the service sector in Colombia and its evolution based on the results of the Technological Development and Innovation Survey (EDIT).
- Evaluate the innovative performance of companies belonging to the service sector in Colombia.
- Establish the determinants of innovative performance in highly innovative companies in the service sector in Colombia.

Conclusion

In conclusion, with this doctoral thesis proposal, scientific contributions are expected to be made, such as: the contribution to the scientific literature on the determinants of innovative performance in companies belonging to the service sector in Colombia, taking into account that most studies on this subject usually focus on the manufacturing industry. Another scientific contribution is the way in which the analysis of the phenomenon to be investigated is carried out, since it transcends the descriptive analysis of grouped data that is usually carried out by government entities that address the issue of innovation, going on to incorporate a more rigorous analysis with the review of microdata and the estimation of non-parametric and econometric models that confer greater scientific weight to the results obtained.

Regarding the innovative component of this proposal, it is possible to highlight the way to address the problem with respect to the determinants of innovation, since the studies reviewed in Colombia show that the factors that positively affect the innovative performance of companies are usually analysed. However, this study also seeks to carry out an in-depth analysis of those factors that have a negative impact and that constitute barriers or obstacles to innovation, which are important to consider when designing public policies and programmes to promote innovation in companies.



Finally, this is a proposal that aims to strengthen regional innovation policies and systems in Latin America, in this case, in Colombia. In addition, it is a proposal that allows comparative analysis of innovative performance in Latin America and Europe, which can be materialised in exchanges of experience between the two regions. Methodologically, models that have been implemented in European countries will be used, therefore, they facilitate comparative analysis. From the above, useful results can be found for the entities in charge of designing innovation policies in Colombia. It is also expected to encourage other researchers to conduct similar studies in other parts of Latin America.

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Forename(s), Surname(s) of the Speaker

Érica Yaneth Guisao Giraldo

Title of the presentation: Effect of dynamic capacities on supply chain innovation (University of Medellín, Doctoral Studies at EAFIT University)

Abstract

The acceleration of the development of the global economy, the evolution of information and communication technologies, the increasingly shorter product life cycles and the demand of customers has led companies to consider innovation in their supply chain as a strategy where they can integrate information and technological developments in marketing and logistics processes, that allows them to be more competitive in the market and respond to the demands imposed by the environment; this is how this research aims to analyse the influence of dynamic capabilities on supply chain innovation, seeking to contribute so that supply chains can guarantee agile, flexible and timely responses as imposed by the market.

The speaker has not submitted a paper for the purposes of this publication.

Forename(s), Surname(s) of the Speaker

Juan Carlos Urueña-Mejía

Title of the presentation: Networking, its impact on management practices and empowerment among entrepreneurs in Colombia

Abstract

This presentation seeks to determine if the establishment of new contacts between entrepreneurs can facilitate the implementation of management practices. An experiment will be conducted in which female entrepreneurs are randomly assigned to committees to carry out a task together. The task is to evaluate other stores different from the city or area of origin where the business of the juries is located with the aim of creating an environment that encourages the sharing of experiences and opinions on business strategies. Women entrepreneurs interact on multiple occasions to allow various opportunities for networks to develop. It is hoped that networking through the competition can increase the adoption of managerial practices and levels of empowerment.

Introduction

Businesses have gender gaps in which those managed by men have higher incomes and growth, so businesses managed by women tend to have a lower performance (World Bank, 2019). The study “Profiting from Parity: Unlocking the Potential of Women’s Businesses in Africa” found that women

entrepreneurs face constraints such as social norms, unequal legal frameworks, and differences in education, resources, assets, and networks. Programmes such as “Emprendedoras Bavaria” seek to reduce these gaps. The programme is established by the Bavaria Foundation, which operates as a non-profit entity independent of the Bavaria company, which “develops social investment programmes that contribute to income generation, poverty reduction, improvement of the quality of life of communities and progress in Colombia”, begins operating in 2017, and seeks to improve the quality of life of shopkeepers and their families in Colombia, for this it has different public and private allies, benefiting about 25,000 entrepreneurs throughout the country. The pillars on which it focuses correspond to business strengthening, digital appropriation, infrastructure provision and financial inclusion. The strategies to carry out this objective include personalised virtual accompaniment, physical adaptation and provision of groceries, new digital and physical elements for the strengthening of business plans, and access to microcredits and savings for old age.⁸

Despite their importance, these companies have related weaknesses at the individual level such as limited access to sources of financing (Karlán and Valdivia, 2011; Drexler et. Al, 2014); approach based on short-term management and limited internal capacity building (Amer et. Al, 2013); insufficient innovation in its productive activities (Madrid-Guijarro et. Al, 2013), the low adoption of managerial practices (Forth and Bryson, 2019) and high levels of informality (Fernandez, 2018). In this context, the development of managerial capabilities, evidenced in a group of practices for the proper management of the business results in greater benefits and growth. For this reason, seeking strategies to massify managerial practices among entrepreneurs is a clear policy objective (Campos et. Al, 2017).

In this context, it is important to keep in mind that businesses do not operate alone in the market, since they have relationships with other establishments, which provide information, training, referrals, among others. However, these networks have some frictions such as information lag, lack of trust, which can lead to limiting their network-based growth (Cai and Szeidl, 2018). Networking helps people and businesses to make their social skills known, listen and learn from others, connect with potential collaborators, partners, or investors, receive advice from people who have achieved a great trajectory in the commercial world, and most importantly, get potential customers interested in buying their products and / or services. Therefore, we are interested in the following research question, what is the effect of networking among women entrepreneurs on the adoption of management practices and on levels of empowerment in Colombia?

Networking

The main measurement of the proposed field experiment consists of the development of a competence to measure the effect of peer networks on business performance, an experiment was designed in which the entrepreneurs of neighborhood stores are randomly assigned to carry out a task together. The task is to evaluate other stores different from the city or area of origin where the jury's business is located (e.g., the Bogotá jury evaluates Funza's business), according to compliance with criteria of formality, use of financial services and adoption of management practices, with the aim of creating an environment that encourages evaluators to share experiences and opinions on business

⁸ <https://afecolombia.org/fundacion/fundacion-bavaria/>

strategies. For the experiment to be real, this requires female entrepreneurs to interact multiple times to allow for various opportunities for networks to develop.

A competition entitled "award for excellence in business" will be organised, this consists of the competing businesses that belong to the Bavaria foundation making a video or a 10-minute presentation in which they present their businesses according to the criteria of formality, use of financial services and management practices, which are evaluated by other shopkeepers, who become our experimental subjects.

Participants: Contestants are evaluated in any of the following four alternatives: group 1 evaluators of the same type of business grouped in committees of 6 people; group 2 corresponds to committees that evaluate another type of business; group 3 individual evaluation by each jury of the same type of business who issues a score for the video; group 4 individual evaluation in which a jury of another type of business makes a judgment. Additionally, there will be a group 5 (pure control) where the shopkeepers will only be surveyed without participating as jurors or as contestants.

The assignment of the shopkeepers as jurors will be carried out randomly. The evaluation will be carried out in person in an auditorium in different sessions for each group. For groups that have group sessions, each committee evaluates 10 videos. If fewer evaluators are presented, one of the groups will have fewer or more jurors. For the individual juries each will evaluate 10 videos.

Within the relevance of this work for cooperation between Latin America and the Caribbean and the European Union is framed in scalability and replicability, this project is scalable, the above because it has an approved protocol, and has different entities allied to the national order both public and private with which the scalability of the project could be carried out. As an example of scalability, there is the "Growing for a Dream" programme of the Bavaria Foundation, which seeks to empower women shopkeepers in the country so that they continue to grow their businesses, initially it began with 500 entrepreneurs and currently benefits about 25,000 from the hand of entities such as UNDP and the National Government.

Regarding replicability, all the steps are defined in a protocol approved by the CEI Research Ethics Committee in such a way that it can be replicated in other contexts and with other types of businesses. The empirical results can be replicated with the release of data and codes through the University's research repository.

Conclusions

The creation of networks via contest can increase the adoption of management practices that imply greater formalisation (6.6%, Fafchamps and Quinn (2018)) of the members of the networks.

Networking through the competition can improve business performance indicators (8.1%, Cai and Szeidi (2018)).

Networking and jury appointment through the competition can increase empowerment.

It is hoped that this study will lay the groundwork for formulating a policy to foster microbusiness networks in the country.

In social terms, it is expected that the families of the entrepreneurs can improve their living conditions because of the participation as entrepreneurs in the contest as jurors.

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Forename(s), Surname(s) of the Speaker

Claudia Magali Solarte Solarte⁹

Title of the presentation: Pole of competitiveness under the political, economic, social, technological, environmental, and legal analysis in the Carchi-Guaitara Hydrographic Basin

Abstract

The research aims to examine the political, economic, social, technological, environmental, and legal aspects that affect the development of a region through the articulation of government and private entities, which make up a pole of competitiveness, which contributes to the well-being of the inhabitants of the Carchi-Guaitara Hydrographic Basin made up of municipalities such as Ipiales, Cumbal, Potosí, Córdoba and El Contadero. The methodology used is the positivist paradigm, quantitative approach, empirical – analytical method, descriptive type, non-experimental design, the

⁹ This presentation is the result of the research entitled Pole of Competitiveness in the Carchi - Guaitara Basin, authored by Marleny Cecilia Farinango Vivanco, Ana Lucía Casanova Guerrero, Claudia Magali Solarte Solarte, Gloria Alicia Rivera Vallejo, Genys Patricia Rodríguez Hernández and Sandra Lucía Bolaños Delgado, belonging to the research groups Management and Competitiveness and Luca Paccioli, of the Faculty of Administrative and Accounting Sciences of the Cesmag University, Colombia. Email: cmsolarte@unicesmag.edu.co

sample is 384 inhabitants. The result obtained is that the municipalities have an excellent geographical location, riches in natural resources, the main source of income is agricultural, agro-industrial, and artisanal production, characterised by its family productive structure; except Ipiales where trade predominates.

Introduction

The research allows to structure an alternative of development, innovation, growth and regional employment that is called *The Pole of competitiveness in the Carchi-Guáitara basin*, as a mechanism for the integration of capacities and competences that guarantees the harmonisation of the governments of Colombia and Ecuador, productive sectors and academia, in order to improve the quality of life of the populations and be immersed in the sustainable development goals of the 2030 agenda of the United Nations (UN).

It should be noted that the research is of great inter-institutional projection and articulates the CESMAG University with governmental, departmental, and educational entities of the neighboring country of Ecuador.

Competitiveness pole in the upper basin of the Carchi-Guáitara River

The Upper Basin of the Carchi-Guáitara River is part of the subregion of the former province of Obando, which, according to the University of Nariño (2014) is:

Located south of Nariño integrated by the municipalities of: Ipiales, Aldana, Guachucal, Cumbal, Cuaspud, Pupiales, Puerres, Córdoba, Potosí, El Contadero, Iles, Gualmatán and Funes. It has an area of approximately 4,894 square kilometers, which is equivalent to 14.07% of the total area of the Department of Nariño. Its population is 273,776 inhabitants, corresponding to 16.49% of the total of the Department; of which 124,646 are in the urban sector and 149,130 in the rural sector. 50% are men and 50% women. Ethnographically it is composed of 92,059 indigenous and 268 Afro-Colombians. The most important economic activities in this subregion are based on the agricultural sector, including commercial and artisanal activity.

To make a contextualisation of the basin, studies carried out by the Regional Autonomous Corporation of Nariño (2007) are taken as a source:

The Carchi River is part of the Patía River basin located on the Pacific slope, born in the volcano of Chiles, located on the border between Colombia and Ecuador and serves as a border line between the two countries in an extension of approximately 45 Km, later enters Colombia with the name of Guáitara. The basin is in the Nudo de los Pastos, a region susceptible to erosion with a high level of risk due to seismic and volcanic threats. The upper basin of the river has a total population of 206,192 inhabitants and comprises the Canton of Tulcán in Ecuador and the municipalities of Cumbal, Cuaspud, Ipiales, Potosí, Córdoba, Puerres and El Contadero in Colombia (p. 21).

In this context, it is necessary to know what a Pole of Competitiveness is, for Pommier (2002), it is considered as a model of French experience that has led it to become the fifth industrial power in the world "focused on industry, science and technology, created in 1998 called the Local Productive System, considered as a network of small and medium-sized companies, with similar or complementary activities where jobs are shared" (p. 5)

Basic conditions for structuring the Competitiveness Pole

- Geographical concentration of productive companies: The border area with Ecuador, in which the Carchi-Guáitara basin is located, is conducive to constituting a Pole of competitiveness, also considering the similarity of the socio-economic, political, environmental and even legal characteristics of the municipalities where the research was carried out. In addition, in the region the most relevant productive chains and encouraged by the regional government are dairy, potato, tourism, minor species that include breeding and raising guinea pigs.
- Innovative industrial specialisation: In the region there is no structured industrial sector that promotes the development of the area, since there are some processing companies, but they are micro, small and medium enterprises, except for some of a national nature that have a presence in the region as is the case of Alpina and at the departmental level Colácteos, both develop their social purpose related to the dairy sector.
- Creation of a group of companies and cooperation relationships: According to the diagnosis made, it was possible to show that the municipalities of Ipiales, Cumbal, Potosí, El Contadero and Córdoba have productive associations, finding the similarity that all are from the agricultural sector, in products such as: breeding and raising of pigs, broilers, guinea pigs, strawberries, milk and vegetables.

Taking this into account, with the structuring of the Competitiveness Pole it is intended to organise the peasant producers to share their experiences and their abilities to offer the market high quality products as required by the current client. Despite this, it can be observed that in this sector there is a weakness of lack of investment by the State that allows the articulation between the commercial and agro-industrial sectors, evidencing in aspects of great importance for this structuring to become a reality.

In addition, there are aspects to improve such as access roads between the different municipalities and the main cities such as Ipiales and Pasto, internet connectivity, innovation with technological support, infrastructure necessary to solve a process that arises from the pole of competitiveness.

It is also necessary to identify the productive centers of the regions and their geographical points suitable for the transfer of the products evidencing the advantages of each of the regions.

The structuring of the Competitiveness Pole is possible with the participation of four fundamental actors such as the State, local organisations belonging to the region, academia and production and service companies, including cooperatives and associations in the region.

Among the strategies that could be implemented are:

1. Empowering education, research, scientific and technological growth for a productive transformation of companies through community awareness workshops.
2. Promoting a culture of peace, security and conflict resolution through seminars, conferences, and workshops.
3. Promoting binational productive and commercial complementarity through strategic alliances



between Colombia and Ecuador, strengthening non-traditional sectors for development and border social inclusion.

4. Promoting and consolidating means for technology transfer and innovation in production processes.
5. Carrying out projects for the use of clean or renewable energies.
6. Promoting the conservation and governance of natural ecosystems and avoiding change in land use through awareness-raising workshops.
7. Seeking incentives for companies that develop social and environmental responsibility projects that involve border communities.
8. Promoting innovation programmes in new and existing productive activities based on the collaboration of the public and private sector and state institutions.
9. Achieve a better positioning of Colombian and Ecuadorian products in international markets through marketing strategies.
10. Enabling a culture of caring for the environment that allows the sustainability of ecosystems through training seminars.

Conclusion

The municipalities under study have an excellent geographical location, riches in natural resources, ease of transport, the main source of economic income is based on agricultural, agro-industrial, and artisanal production, characterised by its family productive structure; except for Ipiales where their commercial activities predominate, therefore, it is possible to implement a pole of competitiveness.

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Forename(s), Surname(s) of the Speaker

Katty Milena Arrieta Canchila

Title of the presentation: Global challenges in the port sector

Abstract

This research seeks to identify the main challenges of the port sector at a global level. First, the effects of the 2019 pandemic and the effects on international trade are analysed. The economic implications

at the level of freight and jobs in the sector are then studied. And finally, possible strategies for the recovery of the sector worldwide are established and proposed, which involve the review of technologies, alliances, and collaborative work.

Introduction

The global port sector is in a stage of technological evolution where the pandemic that originated in 2019 has accelerated the need for adaptation, however, this situation highlighted the lag in many other countries. To this is added the problem of the shortage of containers evidencing problems of the sector worldwide, because there are not enough containers in the ports, which led to an increase in the cost of freight from China by 575%. (Hernández, 2021). This may be of benefit to shipping companies, but it represents a very high cost for countries in terms of international trade. 80% of the containers are being handled by seven shipping companies: APM-Maersk, Mediterranean Shg Co, Cosco Group, CMA CGM Group Hapag-Lloyd, Ocean Network and Evergreen Line. This situation pushes for an adjustment in freight since most containers are in warehouses due to the pandemic affecting global supply chains. (ISPS Network Mexico International and the Inter-American Committee on Ports (CIP) of the OAS, 2021).

Presentation

The costs to transport a 40-foot container from the port of Shanghai to the port of Lazaro-Cardenas in Mexico before the pandemic involved about \$2,000, while in November 2021 prices the same transport was hovering around \$13,000. Some experts add that there is the possibility of a decrease in human talent in activities related to the sector, due to the high fatigue generated by the pandemic, such as health problems, little time on land and sudden changes in the climate, which are affecting the staff. (Valverde, 2021). Although there is currently a deficit, for example, in the United States alone there is a deficit in the position of driver, port operator and forklift in about 800,000 jobs by the end of 2021.

Globally, China is the country with the largest number of container ships, with 191,000 million dollars in assets, in second place is Japan with 187,000 million dollars, in third place is Greece with 145,000 million in assets. In this order, no country in Central America and the Caribbean is displayed. (Offshore Energy, 2021)

All this situation will be reflected in the prices of many of the products, only for the year 2023 where a price increase of up to 11% is expected for the case of computers and 1.5% worldwide. (The Economist, 2021).

In Latin America the impact is being perceived in many sectors of the industry, one of them is the automotive sector, in the case of countries such as Mexico automotive production fell by 20% in 2020 due to the global shortage of electronic chips. This has triggered a social and economic crisis by encouraging the reduction of shifts, jobs, small and medium-sized enterprises; not having the raw material to assemble engines and navigation instruments. (Forbes Mexico, 2021)

The pandemic has brought delays in development and the level of equality in many countries. In the June edition of the World Economic Outlook report states that the world economy will grow by 5.6% by the end of 2021, however, the recovery will be uneven.

The possible answer to the global rebound is to bet on trade, although it is known that it contributes to accelerating the economic recovery by providing sustained external demand for exports and ensuring the availability of imported services and intermediate products. The least developed countries in technological and social terms, where most Latin American countries are located, have a limited capacity to boost their recovery due to the few fiscal stimulus packages, adding their current external debt increased by the purchase of vaccines and supplies for the control and care of the COVID-19 pandemic. The World Bank is supporting reform initiatives and ideas that seek to reduce the impact of the pandemic and promote economic recovery. (World Bank, 2021)

In humanitarian terms the challenges of the supply chain and ports are vital to mitigate the effects of wars and natural disasters, optimal response levels are required to safeguard life and at the right times, respecting the principles of alignment, adaptability, developing mutual respect in all actors involved. (Santos & Ruvalcaba, 2019).

With the recent situation of Ukraine and Russia, a negative impact on the global supply chain is expected, because from these countries a quarter of the raw materials to produce fertilisers (Potash and phosphate) are obtained and they are leaders in the production of food and agricultural products. If the stress situation continues, a decrease of up to 50% in agricultural production is forecast due to the lack of fertilisers. On the other hand, Russia is one of the largest importers of natural gas, raw material to produce ammonia from fertilisers, companies such as Yara International were forced to suspend 40% of production due to high fuel costs. All this has caused an increase in the price of food globally. (BBC News, 2022).

Trade routes between Asia and Europe are restricted because of tension with Russia, in the case of sea routes, Ukraine decided to interrupt the movement of cargo through the Black Sea, so Turkey has been forced to restrict movements through the Strait of Istanbul, this situation generates shortages in cereal shipments. "Although Russia and Ukraine account for only 1.9% and 0.3% of the value of global merchandise exports, these countries are the world's largest exporters of certain raw materials. For example, Russia and Ukraine together account for 59% of global exports of sunflower oil, 36% of world exports of iron or steel, and 26% of global wheat exports" (El Economista, 2022).

With all the above there are many challenges for the port sector: At the logistics level, such as the destruction of freight demand and greater congestion in the supply chain, ship design and construction trends are heading to have increasingly larger ships, which is a challenge at the level of planning the physical and logistics structure to provide services to container ships that includes: nautical accesses, depth in the pier and aerial drafts. Other aspects that are related to uncertainty include: the price of fuels, political situations, pandemics, lack of technology and innovation, global conflicts, changes in consumption, behaviour of shipping lines, among others. (Sánchez, Perrotti, & Gómez Paz, 2020).

Conclusion

In conclusion, the invitation to seek change is aimed at rethinking and redesigning supply chains in port operations, taking advantage of the dynamics of cooperation networks between Latin America and Europe, betting on research and innovation jointly, encouraging the use of technologies in many of the operations, systematisation, reduction of response times, smart contracts, artificial intelligence, in general use of 4.0 technologies and green ports. Likewise, collaborate with the

world's leading ports and review the best operational, logistical, and technological practices. (Campanaro, 2021).

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Forename(s), Surname(s) of the Speaker

Keidy Johanna Peláez Higuera

Title of the presentation: Incidence of the institutional policies of HEIs in the generation of academic undertakings in an emerging economic context (University of Manizales)

The speaker has not delivered a presentation for the purposes of this publication.

Forename(s), Surname(s) of the Speaker

Danilo Sorato Oliveira Moreira; Paula Isabelle Oliveira Moreira; Bruno Dutra de Freitas

Title of the presentation: The Sustainable Development Goals in the community industry of the *Cooperativa Mista de los productores y extrativistas do Rio Iratapuru in Laranjal do Jari* (Brazil, Amapá)

Abstract

This communication seeks to present the sustainable development goals in the project of the Mista Cooperative of the producers and extrativists of the Iratapuru River in the Amazon, Laranjal do Jari city, Amapá state, in Brazil. The initiative is a framework in bioeconomics since it adds economic and sustainable development from the Amazonian communities. The model serves as an inspiration for Latin America and the European Union to create joint projects in this type of initiative. The SDGs are as follows: 5- gender equality, 8 – decent work and economic growth, industry, 9- innovation and infrastructure.

Introduction

The *Cooperativa Mista dos Produtores e Extrativistas do Rio Iratapuru – COMARU*, was created in November 1992, set up by the values and principles of cooperativism contained in law no. 5.764 of 16 December 1971 and other legal provisions in force by the guidelines of self-management. With its administrative headquarters located in Vila São Francisco do Rio Iratapuru, s / n, city of Laranjal do Jarí-AP, office in Laranjal do Jarí / AP, calle bomba, 45, Agreste and legal headquarters in the region of the city of Laranjal do Jari, province of Amapá.

Image 1 – COMARU Meeting, 2019



Source: COMARU, 2019.

The extraction of castanha-do-brasil (Brazil nuts) is the main source of income for thousands of families living in the Amazon. The local producers, called "castanheiros", sell their production to "traversers", maintaining the logic of financing: the product is sold before the beginning of its cycle, with the intention of guaranteeing the survival of these workers in the period outside the season ("entressafra"), for a very low price and in exchange for marketers for production. That was the reality lived by the residents of the south of the province of Amapá, who since the 1960s, live on the banks of the Iratapuru River.

Image 2 – Brazil nuts collection in ISDN



Source: Maurício de Paiva.

Their homes were isolated and therefore, contact with the other families was small. Individually, they had little power of negotiation with the "traversers" and, in this way, they ended up being exploited. Seeking to gather the production of all the "castanheiros" to enable them to negotiate better prices, the residents of the region formed the COMARU in 1992. The families began to change for the same place on the banks of the Iratapuru River, giving rise to the Vila São Francisco do Rio Iratapuru, in the city of Laranjal do Jari, in the Amapá.

Image 3- Vila São Francisco do Iratapuru created after the installation of the Santo Antônio Hydroelectric Power Plant

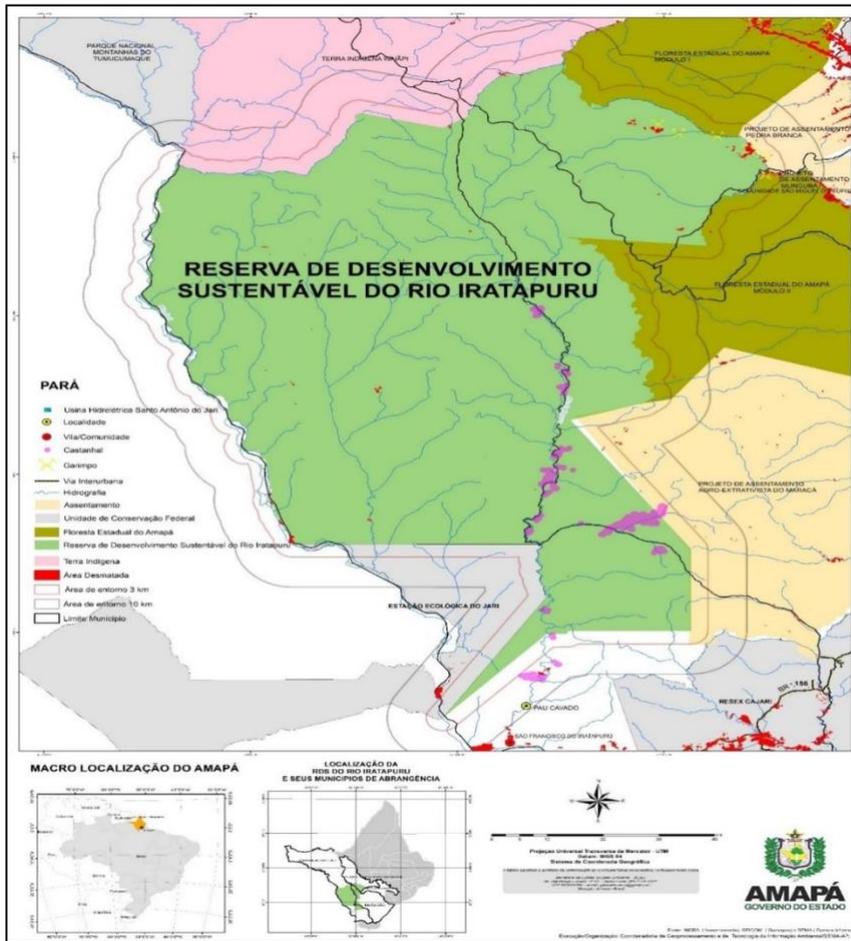


Source: Google.

In the beginning the local workers made castanha biscocho and with a lot of effort they managed to build with the support of the local government the first biscocho industry in the community, it was a very important framework in the history of the organisation, but this dream has not lasted, in 2003, a fire broke out in the plant, and the factory ceased to exist. Faced with the difficulties encountered by the communitarians, ribeirinhos, extrativists this was the greatest challenge, having to redo it to find means of survival and to be able to raise their children with dignity, but in 2004, an opportunity arose to work with the Brazil nuts oil and once again the work came back into existence. The first production supply contract was a low volume (2,000 kg). Today, there are 91 cooperating residents of the São Francisco do Iratapuru Community. They are castanheiros that act in the extrativism of the Brazil Nut in the Reserva de Desenvolvimento Sustentável do Rio Iratapuru (ISDN).

The community has been collecting Brazil nuts in the Iratapuru River for five decades, which is close to the Brazil nut trees of Amapá. The creation of the RDS of the Iratapuru River on 11 December 1997 (Law no. 0392) by the Government of the province of Amapá was a way to protect and use in a sustainable way the non-timber forest resources existing there and preserve the customs of the castanheiros of the Iratapuru village.

Image 4 - Map of ISDN



Source: COMARU, 2020.

Therefore, the project developed in the COMARU community serves as an example for cooperation between Latin America and Europe, since the issues that are discussed are fundamental for international cooperation. For example, bioeconomics, sustainable development goals and the conservation of the Amazon.

The Sustainable Development Goals (SDGs) in the project of the community industry of COMARU, Laranjal de Jari, Amapá, Amazônia, Brazil

SDG 5: Gender equality

It seeks to achieve gender equality and empower women. We know that one of the factors that increase the rates of violence against women is the financial dependence of the partners, in that context the productive chain of the Brazil nuts and the construction of the Community Industry in the Amazon makes possible the economic empowerment of women. The participation of women in the



productive chain of Brazil nuts is great in the province of Amapá contributing effectively to the following goals foreseen within SDG 5:

Goal 5.a: Carry out reforms to offer women equal rights to economic resources, as well as access to property and control over land and other forms of property, financial services, inheritance, and natural resources, in accordance with national laws.

On **Goal 5.a**, investment in rural women's economic autonomy has gradually declined. Although there are no updated disaggregated data in relation to the progress of the Agricultural Reform in the country and ownership of the territories for women, the lack of investment in public policies for the economic autonomy of rural women that achieve the overcoming of violence in the countryside, and in the same way the permanence in the territories, is a mistake. When analysing the country's public budget, there is a reduction in the federal government's investment. Support for the Economic Organisation and Promotion of Citizenship of Rural Women in 2014 was R\$ 32.5 million although, in 2018, it was close to R\$ 3.6 million. In 2019, the value for this share is only 500 thousand reais, still not achieved.

SDG 8: Decent Work and Economic Growth

It proposes to promote sustainable, inclusive and sustainable economic growth, full and productive employment and decent work for all. The harvesting of Brazil nuts is very important for the Amazon since it represents an important economic activity for several collecting communities in the region.

In addition, the stages of transport, commercialisation, and productive transformation on the part of the Brazil nuts increase the generation of income and employment in the productive chain. The people who will work on the construction of the São Francisco del Iratapuru Community and its surroundings and will be trained to assume such functions. With the construction of the Community Industry and during its operation we will contribute to the following goals:

Goal 8.1: Sustaining per capita economic growth according to national circumstances and, in private, annual growth of at least 7 per cent of gross domestic product (GDP) in the least developed countries.

Goal 8.2: Achieving the highest levels of productivity in economies through diversification, technological modernisation and innovation, including through a focus on high value-added sectors and labour-intensive sectors.

Target 8.3: Support development policies that sustain productive activities, job creation, entrepreneurship, creativity and innovation, and encourage the formalisation and growth of micro, small and medium-sized businesses, including through access to financial services.

SDG 9: Industry, Innovation and Infrastructure

It proposes to create resilient infrastructures, promote inclusive and sustainable industrialisation and encourage innovation. With the construction of the Community Industry and during its operation we will contribute to the following goals:

Goal 9.1: Facilitate the development of sustainable and resilient infrastructure in developing countries through increased financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing states.

Target 9.2: Promote inclusive and sustainable industrialisation and, by 2030, increase the share of industry in the employment sector and GDP, in accordance with national circumstances, and double its share in the least developed countries.

Target 9.3: Increase access by small industries and other businesses in developing countries to financial services, including affordable credit and their integration into value chains and markets.

Conclusion

This presentation is a collective work between COMARU and the Brazil nuts workers in the city of Laranjal de Jari. It is a model to follow for the regions of Latin America and the European Union since sustainable development and income expansion are two key issues for the region. The construction of a sustainable industry without harm to the environment is the way forward in international cooperation between the two major regions through bioeconomics.

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Thematic Session 3: New Technologies and the Digitalisation of Scientific Research

Forename(s), Surname(s) of the Speaker

Mario Fernando Bustillo Lopez

Title of the presentation: Disruptive science education: ICT, Organic Chemistry and Augmented Reality

Abstract

Through the development of new disruptive didactic technologies focused on scientific education, applicable in different areas of human knowledge, it is intended to generate completely digital and immersive experiences that replace the real world with a simulated one, capable of supporting the pedagogical process in classrooms in a progressive way. Around these new emerging technologies applicable within the educational system, within the area of Organic Chemistry, AUMENTED is proposed as an educational platform developed by the research team for the dictation of the Organic Chemistry class, which allows the visualisation of three-dimensional structures of chemical molecules using augmented reality. This to facilitate the learning of chemical concepts.

Presentation

The Knowledge Society is marked by the emergence of digitalisation, leaving behind analogue technologies and is based on the use of Information and Communication Technologies (ICT), telecommunications and the Internet (Abreu & Rodríguez Lorenzo, 2020). As Sánchez (2016) argues, during the process of transformation from an industrial society to an information society, a rapid development and increasing use of ICTs is perceived, which has a great impact on all aspects of life. This paradigm shift gave way to the generation of an ever-increasing volume of information; opening a wide spectrum of new methods and techniques for information management. In higher education,

substantial transformations are also going to take place. Universities are challenged to respond flexibly to these changes, and to create new methods that adapt to the learning needs of new generation students. (Abreu & Rodríguez Lorenzo, 2020).

There is talk of the integration of ICT into education, when the educational system can design meaningful learning, product of lifespan experiences and a reflective content, capable of generating in the student and teacher the achievement of generating knowledge. The above mentioned is not focused, only in the classroom, each space and moment where a learning is evidenced, must postulate the idea of becoming this achievement of significance. (Hernandez, 2017).

As a research group we propose to promote the use of ICT and Augmented Reality, the latter considered an emerging technology, as didactic resources for scientific education. In order to generate memorable experiences that allow the visualisation of three-dimensional models and scenes and that at the same time allow interaction with them so as to improve the teaching-learning process. The implementation of these technologies could improve the approach of young people to the construction of scientific thinking and, above all, university training towards the hard sciences in a context of educational technological innovation.

Given the known benefits of Augmented Reality, we propose to develop and implement the AUMENTED-Augmented Reality platform, an educational platform designed by the research team to support and facilitate the learning process in the topics of nomenclature, physical and chemical properties of organic compounds. To this end, the AUMENTED platform allows the visualisation of three-dimensional structures of chemical molecules using augmented reality technology. In addition, the platform has the theoretical and pedagogical concepts necessary to be used at the corresponding educational level. The platform allows, for instance, teaching concepts of Organic Chemistry in a novel, simple and entertaining way. The platform seeks to improve the motivation, stimulation, and interest of students to acquire knowledge and deepen in more advanced concepts and theories of the subject. In short, it is possible to affirm that we find a technology that adapts effectively to the new learning styles demanded by students in the information and knowledge society, and is approaching strongly to the training scenarios, regardless of the educational level where the training action is developed and the subject that is taught.

However, the inclusion of ICT in education must be accompanied by a series of guidelines that define a frame of reference for decision-making regarding the actions to be carried out during the process (Hernandez, 2017). That is why it is necessary to think about strategies and teaching that include ICT to motivate, stimulate and retain students in this new modality.

As mentioned by Ferrer et al. (2019-2021), ICT has had a great impact on improving productivity in general. This change has forced universities to create new forms of study and to establish innovative didactic forms to make knowledge more understandable considering the diversities of the population. It should also be borne in mind that the new generations are individuals with other motivational interests and training patterns, and that the use of didactic technologies as educational means can be used as motivating elements for learning, considering the ease of interaction of students with current technology. It is here when implementing Augmented Reality within scientific education is intended to transform teaching, for this the different research groups for bi-regional cooperation in the development of this technology applied to various fields of knowledge focused on the contents of the

student come into play. This development plays an important role as a factor in the transformation of knowledge societies, as long as it is able to respond flexibly to the new demands that are generated. The incorporation of emerging technologies into higher education will strengthen the teaching and learning process, showing methodological options that support increasingly diverse learning styles (Abreu & Rodríguez Lorenzo, 2020). As Cabero Almenara and Puentes Puente (2020) point out, the adoption of new disruptive paradigms does not imply totally destroying current forms of teaching, but creating new ways of teaching.

We agree with García et al. (2010), the possibilities that these technologies can offer in Higher Education that are still to be discovered, depend more on what we are able to imagine and devise as pedagogical applications, than on the possibilities of technology itself.

On the other hand, the dissemination of this type of knowledge will result in a greater knowledge of the activities carried out by the institutions that generate knowledge and in the motivation of authors and research groups that produce these advances and that, sometimes, do not know that their research transcends the productive system of the country. Having this information from the groups can be useful to propose competitive research projects in university-business collaboration at the bi-regional level. And, finally, it will increase the attractiveness towards potential students. (Moya-Anegón & Chinchilla-Rodríguez, 2015).

The teaching-learning process in the classroom, making use of ICT, requires a set of skills that the teacher must acquire with the logic of adding a methodology capable of taking advantage of technological tools, where teacher training should be considered one of the first options before facing new educational challenges. ICTs as tools added to pedagogical models can become valuable resources for learning, managing to train students with personal and professional skills suitable for the development of a country. (Hernandez, 2017).

Considering that the human being develops in a world of vertiginous changes, technology is only a tool, Augmented Reality must complement teaching, not replace it. To innovate, a contrast must be sought between what was done, is being done and what could be done, to rethink and restructure the new foundations that the current information society demands. In order to promote the necessary skills to succeed in the reality that they will have to live as future professionals.

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Forename(s), Surname(s) of the Speaker

Carlos Exequiel Garay

Title of the presentation: Control of greenhouse gas emissions in 5G/6G networks

Introduction

According to the United Nations Intergovernmental Panel on Climate Change (IPCC), global greenhouse gas (GHG) emissions must be reduced by 40% to 70% by 2050 compared to 2010 to remain below the 2°C increase in global average temperature [1].

The most health-relevant air pollutants are Particulate Matter (PM) with a diameter of 10 microns or less (PM₁₀), which can penetrate deep into the lungs and induce the reaction of the surface and defense cells. Most of these pollutants are the product of burning fossil fuels, but their composition can vary depending on their sources. WHO air quality guidelines recommend a maximum exposure of 20 g/m³ for PM₁₀ and a maximum exposure of 10 g/m³ for PM_{2.5} [2] based on evidence of the health effects of exposure to ambient air pollution.

ITU-T defines the Internet of Things (IoT) as a global infrastructure for the information society that enables the provision of advanced services through the interconnection of objects (physical and virtual) through the interoperability of present and future information and communication technologies. [3]

The massive deployment of air quality detection devices and the analysis of the resulting data allows the development of intelligent applications and services such as real-time air quality indicators. Fifth-generation mobile networks and edge computing support dense deployments of high-resolution sensors with ubiquitous connectivity, high bandwidth, high-speed gigabit connections, and ultra-low latency analytics. [4]

The low-power sensors integrated into the 5G network are powered by batteries that have a limited lifespan, which must be replaced every few years. This process is very expensive, so intelligent energy management could play a vital role in enabling the energy efficiency of networked IoT devices. For example, harvesting energy from naturally or artificially available environmental resources eliminates

IoT networks' reliance on batteries. Collecting unlimited amounts of energy, as opposed to battery-powered solutions, makes IoT systems more durable. [5]

The Internet of Things (IoT) supported by high-speed networks such as 5G today and projected 6G, have the potential to contribute to the real-time monitoring of greenhouse gases, other pollutants and the control of global temperature rise in an efficient way.

We propose a sustainable environmental monitoring system integrated into 5G and future mobile networks, including low-cost sensors with energy harvesting and automatic calibration based on Artificial Intelligence (AI).

Climate change is a problem of a global nature, whose greatest impacts will be in the long term and involve interactions between natural processes and social, economic and political processes on a global scale. Acting proactively and decisively in the face of this is undoubtedly crucial to be able to prevent and mitigate these inconveniences in time, which is why it is essential to strengthen cooperation between Latin America, the Caribbean and the European Union.

Proposed architecture

Environmental monitoring is proposed based on the massive deployment of sensors of gases, particulate matter and atmospheric parameters integrated through Machine Type Communications (MTC) and controlled by an intelligent system deployed at the edge that performs a calibration and constant monitoring of the status of the sensor network. Automatic calibration will be performed continuously based on reference sensors located in strategic positions within the area of interest. The information produced will be stored in the cloud and will be produced based on this information by real-time knowledge products such as forecasts and alerts, and deferred time such as pollution maps and environmental risk models.

Forecasts and alerts will be of interest to the general population. Time-delayed products are planning and control tools for government agencies, having utility in the identification and mitigation of risks and the design of public policies.

The application of artificial intelligence techniques will make it possible to develop indicators and maps of risk of exposure to pollutants in real time. Alarms and automated recommendations may be generated to the population about urban areas with high levels of pollution or specific periods of low air quality.

The use of low-cost sensors will allow to generate, with limited budgets, dense networks for an environmental monitoring of high spatial resolution that facilitates the identification and monitoring of patterns through AI techniques. The use of energy harvesting with capacitor storage will allow a long service time with minimal maintenance, without dependence on the energy infrastructure and minimising the environmental impact with respect to solutions with battery systems [6]. The accuracy and precision of the system will be continuously monitored and optimised by intelligent algorithms hosted at the edge and assisted by reference sensors [7]. This allows mitigating failures in the sensor network, taking defective nodes out of service and generating predictive maintenance alerts based on early detection of deficiencies.

Another application of AI hosted at the edge is the intelligent energy and spectral management of the sensor network by adapting in real time the density of active sensors according to the measured



concentration gradients, adapting the measurement times and spatial density of simultaneous measurements to the spatial gradients and temporal rates of change of the measured parameters.

The knowledge products will be generated in the cloud using AI techniques, based on the information provided by the sensor network, with other sources, such as satellite information, vehicular traffic patterns, etc. Users will be able to set up their own alerts and custom products.

The authentication and encryption technology of 5G and 6G mobile networks can be applied to securing the origin and integrity of environmental information collected by distributed sensors.

The higher millimeter wave (100-300 GHz) and terahertz (0.3-10 THz) radio infrastructure in 6G networks can integrate environmental sensing by spectroscopy. There are molecular absorption bands in these frequency ranges that allow the detection of gases of interest. For example, **NO₂** has absorption bands in the range of **220-330 GHz** [15] and **CO** has absorption bands in the range **0.3-1.1 THz** [8].

Conclusion

A network of environmental sensors associated with an intelligent system for the generation of knowledge can allow the individual to control their environment and government entities to make evidence-based decisions to improve the quality of life of citizens.

The use of artificial intelligence at the edge can enable close monitoring of the network by automating its calibration, optimising its operation, and mitigating its failures.

Mobile networks themselves are a source of added value for environmental sensing applications. They present a connectivity, authentication, and security solution with stable features due to the use of licensed spectrum. They incorporate elasticity through segmentation and TCM profiles. They integrate edge processing using regional data centers.

There is the potential to employ future 6G networks for environmental sensing as a by-product of the operation of its radio systems.

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Forename(s), Surname(s) of the Speaker

MSc. Pablo Jiménez

Title of the presentation: Detection of fibrosis in cardioresonance images using Artificial Intelligence techniques

Abstract

Artificial intelligence techniques have shown great potential in cardiology, especially to identify patterns imperceptible to humans. In this sense, these techniques seem to be adequate to identify patterns in the texture of the myocardium with the aim of locating and quantifying fibrosis. In this presentation we propose a model based on convolutional neural networks, through which we evaluate the ability to diagnose tissue damage in MRI images. Normally these damages are detected using images with contrast agents. However, the hypothesis of the work is that there are textures of the MRI images that allow to detect and quantify these lesions.

Introduction

Artificial intelligence (AI) techniques have shown great potential in cardiology, as they allow identifying patterns that may be imperceptible to humans. In particular, the analysis of textures in medical images by means of deep neural networks (radiomics), demonstrated to have applications in the diagnosis of arrhythmias, infarctions, or valvular diseases (1-4). In this work we seek to use radiomics-like techniques to detect fibrosis in cardioresonance (MRI) images, which normally cannot be diagnosed without using contrast agents. The objective is, from a database of diagnosed patients, to train a model based on neural networks that allows detecting lesions in these images. The hypothesis of this work, and of radiomics in general, is that the characteristics of the image, duly identified, can be useful to predict the prognosis and therapeutic response for various conditions, thus providing valuable information for personalized therapy (5).

Materials and methods

We conducted a retrospective observational study in 75 subjects of the Sanatorium San Carlos de Bariloche, Argentina (SSC) with various pathologies and subjects with normal diagnosis. MRI images were acquired for each patient, using a Philips Intera 1.5 T equipment using an SSFP sequence with triggering. Out of these 75 patients, 35 had lesions in the myocardial tissue. These lesions were detected and segmented by an SSC cardiologist, using late-enhancement LGE images, who used gadolinium 0.1 mmol/kg as a contrast agent. From these studies we obtain MRI volumetric images of 12x512x512 pixels, with the right ventricle and myocardium segmented, and volumetric images with late enhancement of 9x256x256 pixels, with the myocardium and segmented lesions (provided that the patient has lesions).

The interest of our work lies in the analysis of the MRI images obtained without contrast agent, so we seek to correct in them the lesions segmented in the LGE images. To do this, we perform an automatic alignment between both images, and then transfer the segmentation of the lesions to the MRI images.

It consists of a spatial translation, in which we align the centers of mass of the left ventricle (LV). Then we apply a rotation, in such a way as to match the segments that join the center of mass of the LV with the center of mass of the RV. Finally, we perform an interpolation to match the physical dimensions and spacing of the images. As a result, we obtain MRI images with their original size and with the segmentation of lesions in the myocardium. We also identify in the cinema image of a subject the myocardial tissue of the left ventricle using the approach proposed in (6). From these images with their segmentation, we generate the database with which we train our model. It consists of regions or *patches*, centered in random regions of the myocardium and in different cuts of the volumetric image, where we also record the distance to the center of mass of the LV.

Once the database is created, we define a neural network model. It is divided into two parts. The first receives as input the patches and corresponds to an encoder of 3 convolutional layers (CNN) of different sizes, with which we seek to analyse the textures of each patch. The second part consists of a multilayer perceptron (MLP) with a dropout at the output of each layer. This part of the model processes the texture information, concatenates it with the information of the distance to the center of mass of the LV (dCM) and generates a normalised one-dimensional output in the range [0,1]. The schematic of the model is shown in Image 1.

The objective of the model is to obtain an output that replicates the following binary classification for each patch: it contains a region with injury or does not contain it. To train it we define as a cost function a Binary Crossentropy, which reflects the accuracy of the probabilistic forecast of the model.

Results

We evaluated the accuracy of the proposed model to detect the presence of a lesion. We took patches of 11x11 pixels, as it showed to provide the most information, in contrast to the number of independent patches available. For this size we have a total of 2395 patches, of which 50% contain regions with lesion and the other 50% do not contain them (either because the region does not present lesions or because the patient does not present them). From this set we separate 1969 patches for training, 317 to validate and 109 to study the power of generalisation of the proposed model. Each of these sets contains patient data that is not repeated in the others, so that they are independent. Using this database we studied the accuracy of the model, using data augmentation (through rotations and reflections) and adding the distance information to the center of mass of the LV. The results show that it is possible to increase the accuracy of the model by 4% when using data augmentation, and 5% more when considering the information of the center of the patch with respect to the center of mass of the LV. In this way the final model reaches an accuracy of 89% for the validation data and 70% for the test data. These results are considered acceptable and show the potential of using neural networks for the detection of fibrosis through MRI imaging. This 19% difference between the accuracy obtained with the validation and test data reflects a limitation related to the amount of data available for the work. Although these results correspond to the classification of myocardial regions, this can be extrapolated to a complete image, where for each pixel a probability of injury is assigned, which corresponds to the average of the output of each patch that contains it. In this way we managed not only to identify regions with injury, but also to quantify tissue damage for a subject. This last technique is exemplified in Image 2, where the results obtained for subjects with (a) and without (b) myocardial lesion are shown. The results of the MRI and LGE enhancement images are also shown, as a reference, where

the segmentation of the lesion is superimposed on the MRI image. We observed a great spatial correlation of the area that contains the lesion in the myocardium, showing a low quantification for the subject who does not present injury.

Conclusions

This work shows the potential of using a neural network-based model to identify fibrosis in the myocardium from MRI images. To our knowledge, this is the first study in the country to evaluate artificial intelligence techniques to quantify myocardial tissue lesions only using cardioresonance cinema imaging. We managed to identify fibrosis in MRI images, obtaining an acceptable accuracy. The development and improvement of these techniques could allow the detection of tissue damage without the need to resort to contrast agents such as gadolinium. However, it is necessary to extend the work to a greater number of cases, using different teams and patients with lesions of different etiologies, in order to reduce the observed error, improve accuracy and validate the proposed methodology in a larger population.

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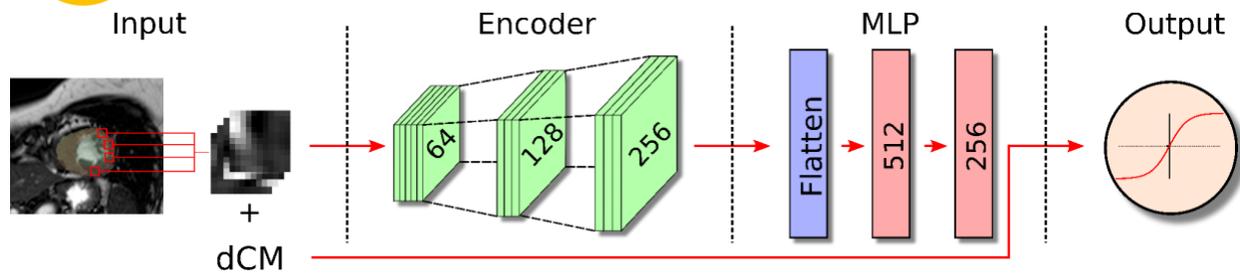


Image 1. Functional scheme of the proposed neural network model. The input of the model (Input), the convolutional layers (Encoder) and the dense layers (MLP) are shown, where the input data analysis process is outlined. It is schematised in addition to the output of the model (Output), which passes through a threshold that defines a binary result.

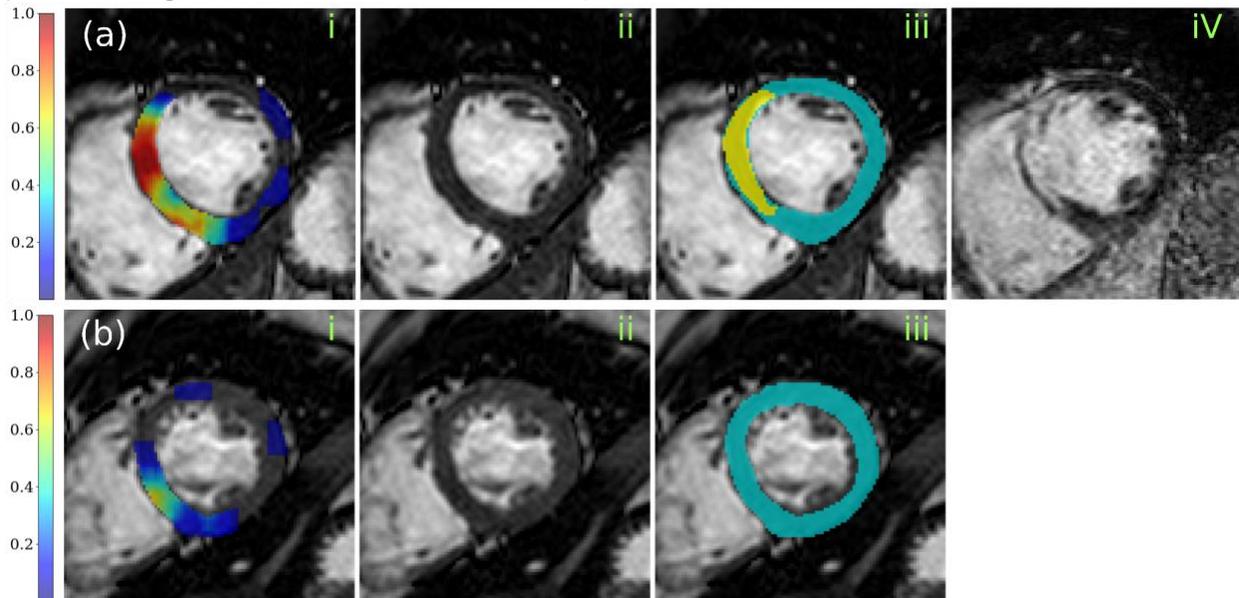


Image 2. Quantification of tissue damage in myocardial images of patients with injury (a) and without injury (b). The MRI image is shown with the quantification of tissue damage (i) without the quantification (ii) and with the segmentation of the lesion (iii). For the patient with injury, the LGE image from which said injury is segmented is also shown (iv).

Forename(s), Surname(s) of the Speaker

Kevin Morales Chamorro

Title of the presentation: The future of medical technology against multi-resistant infections (UNICA, Nicaragua)

The speaker has not delivered a presentation for the purposes of this publication.

Forename(s), Surname(s) of the Speaker

Natasha Sophie Pereira

Title of the presentation: Cora Coralina's Way - Digital Passport for Pilgrims

Cora Coralina's Way is a long-distance trail that connects some tourist cities in the State of Goiás-Brazil. It is a trail intended for hikers and cyclists, called Pilgrims, who seek an experience of well-being and approach to nature. To travel the way, the pilgrim must acquire the pilgrim's passport, which is a document to record each point reached by him, enabling the issuance of a certificate at the end. This work aims to present a digital alternative for the pilgrim's passport. A mobile app that automatically records the checkpoints reached and allows pilgrims to share their experience. The app also has the purpose of presenting information about fauna, flora, and local culture for each section of the trail, in addition to placing the pilgrim on establishments close to his spot.

Introduction

The Cora Coralina's Way is a long-distance trail intended for hikers and cyclists with approximately 300 km in length that crosses five historic cities (Corumbá de Goiás, Pirenópolis, São Francisco de Goiás, Jaraguá and Cidade de Goiás) and three municipalities (Cocalzinho de Goiás, Itaguari and Itaberaí) from the State of Goiás-Brazil. The trail was conceived in 2013 with the purpose of connecting old routes used by travelers, but only in 2017 the project was resumed by Goiás Turismo - State Tourism Agency and culminated in becoming one of the main tourist routes for hikers and cyclists in the state (Caminho de Cora Coralina, 2019).

The path is divided into 13 routes, which can be covered one-by-one or during the same trip. On each journey, the pilgrim must visit a checkpoint to register his performance, which is done manually through the stamp on a printed document, called the "Pilgrim's Passport", being necessary to confirm in advance the availability of agents, who will check the completion of that route. After completing the entire path, it is possible for hikers to issue a digital certificate, which is called the "Pilgrim's Certificate" (Portal Goiás, 2021). To obtain this certificate, it is necessary to send a passport photo with all checkpoints stamped to the project organisation (Caminho de Cora Coralina, 2019).

The manual process of marking the completion of each journey and issuing the certificate can lead to a bad experience for the pilgrim. Considering the manual form of the process, the question arose about ways to improve it and increase the experience lived by pilgrims during the journey, seeking ways to encourage travelers to complete the entire journey. In this sense, this research aims to automate the process of marking the completion of each path and issuing the digital certificate for pilgrims on the Cora Coralina's Way through the development of an application for mobile devices.

Presentation

In October 1921, the American forestry engineer Benton MacKaye presented to the world one of the most original ideas in the history of mountain sports: The Long-Distance Trail (Menezes, 2017a). His idea gave rise to the Appalachian Trail, inaugurated in 1932 and, since then, it has served as an inspiration and subsidy for the establishment of more than 1,000 long-distance trails around the world (Menezes, 2017b).

In Brazil, the project started in 1999, with the signaling of 60 km in the Tijuca Forest, whose route was already thought to be able to be expanded to the entire Municipality of Rio de Janeiro, in what would become the Transcarioca Trail (Menezes, 2017a). In 2018, in Brazil, the National Network of Long Course and Connectivity Trails – Rede Trilhas was established, inspired by international experiences, the Rede Trilhas brings together major national paths, which are composed of smaller regional trails, and promotes integrated planning and standardized signage of trails throughout the national territory, promoting recreation, generating employment, income and connecting landscapes (Meyer, 2020). The Brazilian Long-Distance Trails already account for 8,110 km of route, through 58 trails currently registered in the Rede Trilhas, having the potential to contribute significantly to the transformation of the country's natural and cultural attractions into tourist products, which is, in fact, one of the biggest challenges in strengthening tourism in Brazil (Meyer, 2020).

Tourism has become an activity to generate jobs and income, being highly valued in development strategies, has become a modality widely used in poor regions. This sector also became part of the list of Sustainable Development Goals – SDGs, being included as the eighth objective “to promote sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all” (Almeida, 2020, p. 2). Cora Coralina's Way appears in this context, as it was built in central Brazil, which is rich in lush landscapes, delimited by villages and parks, which together result in magnificent historical scenarios (Almeida, 2020).

Among the ten longest trails in Brazil, two of them are in the State of Goiás, namely the Veadeiros' Ways and the Cora Coralina's Way, each with more than 300 kilometers in length. The Cora Coralina's Way was designed with the purpose of connecting municipalities, villages, farms and attractions, passing through old paths, in a tourist route for walkers and cyclists (Caminho de Cora Coralina, 2021). Divided into thirteen sections, during the journey the traveler can have an experience of greater contact with nature, interacting and observing the fauna, flora, and history of the region, being able to come across waterfalls, mountains, caves, museums and the savanna (Rede Trails, 2022a).

The Cora Coralina's Way was structured through the Experiences in Nature Programme, supported by Goiás Turismo - State Tourism Agency, which made it possible to include the Pireneus State Park, Pireneus Geopark, Serra de Jaraguá State Park, Area of Environmental Preservation of Serra Dourada and Municipal Park of Estrada Imperial, which are environmental conservation areas in the region. The structuring of the path mobilized the local communities and started the organisation of the Cora Coralina's Way Association (Rede Trilhas, 2022b). When starting the route, the pilgrim must acquire the pilgrim's passport, where the traveler must register the completion of each section of the route in predefined locations that can be found in cities, towns and at the Cora Coralina's House Museum. Those responsible for the place must be informed of the date and time forecast that the pilgrim will pass so that their passport can be stamped. At the end of the entire route, one will obtain a digital certificate after submitting a passport photo with all the stamps (Caminho de Cora Coralina, 2019).

The methodology adopted during the execution of this project follows three stages (Dias-Neto et al., 2010): i) conception, where all the bibliographic research was carried out on the Cora Coralina's Way and an adhoc research on the technologies to be used; ii) Construction, where the waterfall software development model was used (Pressman and Maxim, 2016), which is based on five steps: requirement - requirements gathering and system prototyping; project - definition of technologies and system architecture; implementation - coding using the defined technologies; verification – carrying out tests



to verify that the system meets all its objectives; and maintenance - updating and evolution of the system; and iii) validation, carrying out acceptance tests with the end users of the system, who will use the application when going through the Cora Coralina's Way, verifying that the system meets the perceived need during the requirements survey.

Results and Final Considerations

The developed application automates the entire process of marking the checkpoints and provides the pilgrim with an interactive map of the route, allowing them to access information about the fauna and flora of the place where they are, in addition to informing the commercial and tourist establishments in the region. The application also allows the pilgrim's experience to be recorded, through the possibility of storing photos, videos, audio, and texts always linked to their location. Also, to allow an increase in the pilgrim's experience, the application presents a ranking that presents information on the time and distance traveled by other hikers. The development of this project made it possible to build a performative software that meets the requirements initially raised and with a high level of maintainability.

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Forename(s), Surname(s) of the Speaker

Sophie Laube Marcelus

Title of the presentation: Presentation of Tainos Visual Arts (TVA)

Abstract

Tainos Virtual Arts (TVA) is a technological laboratory based on the exploration of virtual and augmented realities. The objective is to offer customised solutions adapted to the needs of our customers' immersive experiences. It is tripartite: application development, implementation of training services and integration on these new technologies. TVA counts with applications such as African-American-Caribbean Heritage (MAAC), ICOM Haiti, TT PHOENIX and collaborates with the International Association of Universities (IAU), the Agence Universitaire de la Francophonie (AUF), among others. Our goal is to implement “Cariverse”, the Metaverse throughout the Caribbean.

We are developers/programmers, graphic designers, 2D/3D infographers working especially for the Caribbean.

Tainos Virtual Arts

Tainos Visual Arts (<https://tainosvisualarts.com/>) is a laboratory that evolves in new immersive and sensory technologies, especially Virtual Reality and Augmented Reality. Since 2019, we have acquired important experiences that have allowed us to walk towards our goal and orient ourselves better.

Our activities revolve around VR and AR applications, integration services (coming soon) and VR and AR-related training.

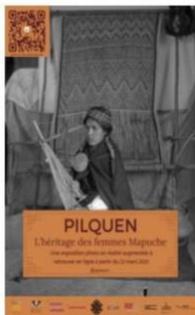
Products and services

Current activities carried out by the Tainos Visual Arts team are divided into three types that include, Augmented Reality (AR) and Virtual Reality (VR), integration services (coming soon) and training related to VR and AR. Some examples of our applications are:



The application "Patrimoine Afro-Américain-Caraïbe (MAAC)" promotes the discovery and valorisation of different Afro-Caribbean artists and the process of transmitting "female legacies", whose production is reinterpreted in the light of the notion of "heritage".

Pilquen - L'héritage des femmes Mapuche



PILQUEN: the heritage of Mapuche women, which aimed to value Mapuche heritage through the transmission of textile art within female genealogies.

WOMEN OF SOUTH AFRICA: The exhibition highlights the division between the white city and the townships, a consequence of colonisation and decolonisation, and highlights forms of internal solidarity in Cape Town.

Among VIRTUAL REALITY applications there are:



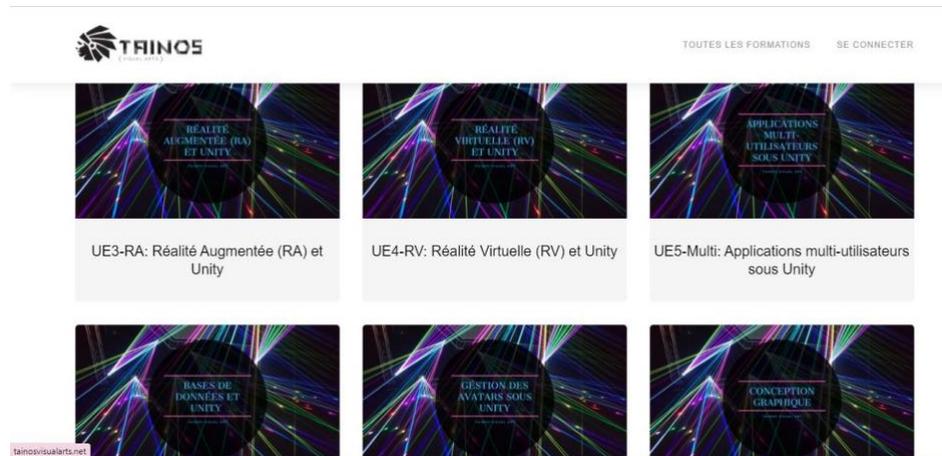
ICOM Haiti

This exhibition, in its current version, allows you to access 11 pavilions that present Haitian museum institutions (<https://icom-haiti.mini.icom.museum/salon-virtuel/>).

TT PHOENIX

This virtual reality app, which simulates a carnival experience, was designed on Trinidad and Tobago's carnival parties that were postponed due to the lockdown. This app is at the same time a user experience to explore carnival activities.

Sharing knowledge



The overall objective of this initiative is to share the experiences we have gained in our various research and development of different VR and AR applications in the form of training. These trainings are totally virtual or hybrid, integrating the most modern technological training tools with AR and VR technologies, not only for educational purposes, but also for the cultural and tourism industries.



Problem

The increase in tourism observed in recent years, before the pandemic, confirms that the sector is now one of the most powerful engines of global economic growth and development, said UNWTO Secretary-General Zurab Pololikashvili. In addition, in different Caribbean countries, tourism can represent between 50 and 90% of the GDP of the country in question. In Saint Lucia, for example, 65 per cent of income comes from the tourism sector. However, between 2018-2020, due to the pandemic, the number of tourists in the Caribbean fell from 29.9 million to 11 million. As Caribbean countries try to stabilise their tourism economies, consider the case of the Dominican Republic, which has recovered 80% of the tourists it received before the pandemic. Haiti is on the world tourism blacklist.

Meanwhile, although tourism is down, annual global sales of virtual and augmented reality headsets between 2019 and 2021 have gone from 8.5 million to 100 million. And in 2019, the demand for AR/VR engineers increased by 1400%." In 2018, the VR/AR market was valued at \$27 billion and is expected to reach \$393 billion by 2025. In 2015, the number of Haitians living abroad was estimated at 2.5 million.

Cariverse

The Cariverse is in line with Mr Zuckerberg's recent initiatives and statements on the Metaverse, the strategy of the Tainos, but dedicated to the Caribbean. Mr Zuckerberg in the Metaverse, the strategy of the Tainos, but dedicated to the Caribbean. *The World (Metaverse) -> The Caribbean (Cariverse) -> Haiti (AyitiQuest)*. That is, the cultural world of the Caribbean in digital form. "A metaverse is a fictional virtual world. The term is commonly used to describe a future version of the Internet in which virtual, persistent, and shared spaces are accessible through 3D interaction. Another definition says that "the metaverse" is the set of virtual worlds connected to the Internet, which are perceived in augmented reality. The word was coined by writer Neal Stephenson in his 1992 novel Snow Crash. In French, it means "metavers".

AyitiQuest

AyitiQuest, a VR application that allows you to experience the Haitian cultural heritage in full immersion, that is, from the VR headset you can immerse yourself in a virtual world that challenges the limits of space and time, as well as health and safety restrictions. The main objective of this Virtual Reality application is to promote Haitian cultural heritage through exhibitions of paintings, images, statues and other Haitian cultural works in a virtual museum. AyitiQuest is the first element of the Cariverse. The other elements could be called Cubaquest, JamaïqueQuest, etc. In the future many services will be offered on this platform. Link: <https://tainosvisualarts.com/ayitiquest/>

Current partners

Partners with networks and excellent visibility in the sector (good position in the immersive education market):

- Agence Univ. de la Francophonie (AUF - Haiti and Asia)
- University of Clermont-Auvergne (UCA, France)
- The University of the West Indies (UA, Martinique) and the Lyceum of Bellevue (Martinique)



- Icom-Haiti (international network of museums)
- Gael Monnin (pos. Miami)
- University of the West Indies (UWI, Caribbean)
- Labo URGEO, UEH, (Dr D. Boisson - Dr E. Calais)
- The Association of International Universities (IAU)
- The UNEVOC network

Target audience

- Public institutions: Ministry of Tourism, Ministry of Culture, Ministry of Education
- Private sector: hotels, museums, resorts, art galleries (G. Monnin), tourism agencies, media (Harry Potter effect)
- Professionals and non-technical people who wish to master the tools of the Metaverse.
- The young population (video games = "Early Adopters")

Conclusion

Through extensive research on these new technologies and with its three-pronged product: the development of AR and VR applications, the integration service in companies and the sharing of our experiences in the form of training for French speakers, Tainos Visual Arts is committed to helping its clients achieve their goals by offering them tailor-made and innovative solutions for an immersive experience.

Thematic Session 4: Public Health (I)

Forename(s), Surname(s) of the Speaker

Maricelly Gomez Vargas

Title of the presentation: Training in Psychology and Mental Health: The Dialogue-based Perspective

Abstract

I present some contributions from the academic community to achieve Goal 3, Health and Well-being, of the Sustainable Development Goals. Based on the articulations between university education and conceptualisations of mental health, I propose to introduce the dialogue-based ontology of Mikhail Bakhtin, as the epistemological foundation of what we know as multidisciplinary and thereby discuss mental health beyond its psychopathological connotation. This ontology conceives the human being as a product of dialogue, that is, of the multiple voices and practices directed to one another. It is a discursive alternative to include in universities, reproducers of speeches in the places where psychologists and other mental health professionals take place.

Introduction

I present some discussions on the concept of mental health that is transmitted discursively in the context of university education in psychology. This disciplinary delimitation is due to the qualification that this profession has as a "mental health profession". I consider that there are different discursive practices on the subject, but that a logic of "sickology" is still maintained, as argued by Edmundo Granda (2004, p. 3). With this I want to emphasise two issues, both based on the dialogue-based perspective of the bakhtin circle:

1. The first issue has to do with the recognition that mental health is a *polyphonic* concept, that is, that it is permeated by multiple voices and that even, if we think about it only from psychology, there are already several differentiated versions of mental health, confused on many occasions with mental health problems or psychopathology, this being a different phenomenon.
2. The second aspect highlights the possibility of resorting to an ontology or conception of human being that integrates the antagonistic ontologies that have traditionally governed the discourses of mental health, that is, the traditional individual-society or internal-external dichotomies.

Next, I expose in an articulated way some discursive practices of mental health according to the perspective of professors of psychology in two universities in Medellín, Colombia and the dialogue-based ontology that could sustain, in addition to the practices in psychology, the multidisciplinary in mental health. In the conclusions we describe the relevance of this issue for cooperation between Latin America and the Caribbean and the European Union, and how these results can contribute to energize, improve and strengthen relations between both regions.

Presentation

We present the results of a doctoral research that aimed to understand the discursive practices on mental health of psychology professors in Colombia. The theoretical-methodological framework is based on the approach of discursive practices and production of senses formalised by the Brazilian professor Mary Jane Spink and collaborators (2014). We conducted four remote workshops with four groups composed of three internship supervisors from two universities in Medellín, Colombia. We carry out the analysis of discursive practices through the strategies known as associative tree, word association analysis and dialogue map.

With these analytical strategies we highlight the meanings of our participants consistent with the proposal of Ignacio Martín-Baró about the importance of the material conditions of existence in mental health. There are also some allusions to a relational and community approach, but notions of individual and mentalistic nature, such as well-being or mental processes, are still more relevant. It is striking that, at the level of the ways of naming mental health, many of the words lacked a specific theoretical reference, being more typical of an everyday language, as, for example: tranquility, spirituality, harmony, day to day, synergy, commitment, balance, etc.

In the description of mental health phenomena emerged repertoires focused on the sense of problem, some examples are crisis, overflow, anguish, anxiety, fear, terror, resistance, insecurity, disorders, depression, suicide.

I note that the idea of pathology and the problem remains, senses of a mental health in its individual connotation, which is refuted by others that emerged in the workshops and whose contents consider that, in addition to the subjective characteristics, it is necessary to include socioeconomic and cultural conditions, pushing for a more collective vision that avoids the responsibility of the person for their mental health. This means that there are several conceptions of subject, and it is based on them that mental health professionals guide their practices.

I believe that an ontology that brings together and gives philosophical consistency to the different conceptualisations, whether focused on the intrasubjective level (organic functioning or mental processes), intersubjective (relational) or social (micro and macrostructures of society), would allow a discursive expansion and, by extension, a diversification of practices for the promotion of mental health and its care.

I should point out that dialogue-based ontology was proposed by Bakhtin for the field of linguistics and especially to inaugurate a new discipline that he called translinguistics (Todovov, 2017). However, in his ontology we identify a clarity regarding the individual: for the author the individual is not the intrapsychological, it is about what is unique and impossible to replicate. This makes it clear that a personal act cannot be attributed to an isolated individual, because self-awareness is always discursive, and therefore always directed towards one another or a social norm. Under this logic, individual and society can be analysed in their different levels of discursive relationships, thus facilitating the encounter of the antagonistic ontologies and epistemologies that have characterised the conceptual debates on mental health, either in their sense of health or in the sense of problem.

Conclusions

The United Nations (2018) proposes one of the targets for Health and Well-being (Sustainable Development Goal 3) which suggests that: "By 2030, reduce premature mortality from noncommunicable diseases by one third through their prevention and treatment, and *promote mental health and well-being*" (p. 24, emphasis added). In this same document, the indicators to account for this goal allude to an idea of mental health as a problem, since it states that: "3.4.1 Mortality rate attributed to cardiovascular diseases, cancer, diabetes or chronic respiratory diseases 3.4.2 *Mortality rate by suicide*" (p. 24, emphasis added). Therefore, we also show here, as in the discursive practices of university professors in Colombia, the conceptual dichotomy that assumes two senses of mental health: its sense of health and problem.

We are drawing attention to the still prevailing confusion between mental health and problem or disorder, even though the definitions in different documents of the World Health Organisation (1950, 2001, 2004) make clear their position that it is not the absence of psychopathology. This, from our reading is first due to the reproduction of this discourse of sickness during the university training of psychologists and other mental health professionals; and second, to ontologies that exclude each other from the individual and social division. That is why we see in dialogue-based ontology a philosophical way out of this debate, because it allows us to understand that there are no internal or external responsibilities, but that our constitution as a subject or human being is always in function of another, whether real or imaginary, and that this is evidenced by the statements that we address to others, including ourselves in those others. In this regard, Bakhtin states: "I cannot exist without the other, I cannot become myself without the other, I must find myself in the other by finding the other



in me (in a reflection and mutual perception)" (Bakhtin, 1996, p.344, our translation from Portuguese).¹⁰

In accordance with the above, I believe that cooperation between Latin America and the Caribbean and the European Union can be based on a common cause based on this ontology, without forgetting the particularities of the territories. On the other hand, this work contributes to the conceptual delimitation of mental health that, from the psychological perspective especially, reinforces the need for more specific concepts. For example, psychological well-being theorised by Carol Ryff, privileged social relations by Ignacio Martín-Baró, or any other concept. To these discursive practices, without being better than the others, but all already conceptually formalised, can be added the other areas of knowledge and daily knowledge, ancestral and transcultural knowledge, as based on the dialogue principle of the multiple voices of Bakhtin.

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Forename(s), Surname(s) of the Speaker

Edgar Guillermo Pulido Guerrero

Title of the presentation: Ideas for pandemic-related mental health risk mitigation in the context of secondary education

¹⁰ I cannot exist without the other, I cannot become myself without the other; I must find myself in the other by finding the other in myself (in a mutual reflection and perception).

Abstract

In the current context, there is suspicion of an impact on adolescent mental health due to the pandemic. This presentation briefly describes some international experiences where ICTs are used for the promotion and prevention of adolescent mental health, as well as the proposal of possible themes and characteristics of interventions and strategies that can be designed for the mitigation of mental health risk due to the pandemic from the perspective of positive psychology.

Introduction: the problem of adolescent mental health and the pandemic

Epidemiological and statistical data, such as those from the National Mental Health Survey, show a worrying profile of mental health affectations, mainly anxiety and depression (between 5.3 and 5.5% prevalence), as well as a level of problematic psychoactive consumption among Colombian adolescents (between 11 and 17% prevalence), related phenomena, among other things, the social violence that has characterised the country in recent decades (Cruz-Ramírez et al., 2017).

To this are added the possible negative consequences of the pandemic and the derived confinement, which, according to some systematic reviews such as the one recently made by Panchal et al. (2021), are characterised by increased symptoms of anxiety and depression, irritability and bad mood, as well as excess exposure to multimedia and the internet.

In this context, the WHO (2020) has warned about the urgency of intervening through innovative paths that include technologically mediated interventions. In addition, there is sufficient evidence on the effects of school-based interventions through which positive psychological components such as emotional skills or resilience are strengthened (Francis et al., 2021).

Some previous experiences in the approach to adolescent mental health with ICT mediation

Table 1 shows some international experiences in which ICTs have been used to strengthen mental health through positive psychological factors.

Table 1

Experiences supported by research for the strengthening of positive psychological aspects of mental health through ICT in adolescents

Authors	Programme name	Brief description
Burckhardt et al. (2015)	BiteBack	It consists of activities that take place for 6 weeks; based on positive psychology techniques. Participants can log in anonymously.
Gladstone et al. (2015)	CATCH-IT	14 modules for teenagers and 4 for parents, based on CBT. Works on behavioural activation, resilience and interpersonal relationships
Calear et al. (2016)	E-coach	Internet programme with 6 sessions, the first psychoeducational and the others based on Cognitive-Behavioural Techniques



Flujas-Contreras et al. (2017)	Space Academy	5 modules where a space academy is simulated to teach resilience and emotional regulation
Stewart et al. (2020)	TOP	12 to 24 sessions with psychoeducation, relaxation, regulation, safety, positive vision, etc. Includes parents. Works symptoms of post-traumatic stress
Whittaker et al. (2012)	MEMORANDUM	Smartphone intervention to prevent depression. Send daily messages and information on emotion management, conflict resolution, etc.
Pramana et al. (2014)	Smart CAT	For work with anxiety in children and adolescents. It has tasks, notifies and remembers when to do them. Includes a multimedia bank. Work on coping strategies, emotion management, etc.

Outline of some ideas for the intervention

Based on the review of the experiences described above, some possible topics are established for the development of a proposal for intervention through ICT for the strengthening of positive psychological factors with adolescents: 1) psychoeducation on risks in mental health and resilience, 2) control and emotional regulation, 3) coping and optimism, 4) work on components of the self such as self-compassion, self-concept, autonomy, self-care, 5) interpersonal relationships and search for social support, 6) life purpose and personal growth.

On the other hand, it is considered that the intervention should be based on the school for the social role and interest of educational institutions, as well as for the coherence with other issues such as coexistence and sexual health that must be intervened by schools, and of course, for the practical implications and feasibility of doing so in this way. Similarly, based on the review made, other necessary characteristics are established: 1) use of technologies compatible with computers and cell phones with attractive designs and use of multimedia, 2) possible use of B-Learning and didactics, 3) based on cognitive behavioural techniques that have greater empirical evidence, 4) include parents and teachers, 5) development of objective and longitudinal measurements to determine the effect on multiple indicators, and 6) with qualitative evaluation of aspects such as accessibility and usability of ICT.

Conclusion: Why integrate ICT and why "Positive Psychology"?

What is presented corresponds to a very general outline of what could characterise an intervention in positive psychology, based on school and with ICT integration, in favour of the mental health of adolescents in a context as necessary as the current one. It is concluded that there are several reasons why the relevance and pertinence of carrying out efforts of this type is maintained. First, because the possibility of automating mental health education processes reduces costs, since it does not require so much presence of professionals and can be accessed from home or from school at different times.

Furthermore, ICTs appeal to adolescents. For a couple of decades, humanity has witnessed a rapid development of internet interaction options and connectivity through computers and smart phones, which has facilitated a cultural change under the concept of *digital natives*.

Another reason for the proposed ideas is that the model of positive psychology is very coherent with health promotion, given the common idea between the two about strengthening aspects that serve as protective factors.

Finally, the different systematic reviews aim to demonstrate the effectiveness of interventions in positive psychology and cognitive-behavioural techniques, including with the mediation of ICT, for the promotion of mental health in adolescents.

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Forename(s), Surname(s) of the Speaker

David Felipe Vega Villa

Title of the presentation: Research in Technology and Mental Health in the Colombian Caribbean: an introduction.

Abstract

The Colombian Caribbean is a region with great challenges and needs in science, technology, and innovation, with areas with the lowest rates of human development and a serious mental health outlook. Given this, the technological tools for the study and promotion around this factor are fundamental to generate well-being from science, from the use from the community. This presentation will focus on introducing the field of technology applied to mental health in the Colombian Caribbean based on the efforts made from research, with great contributions from young researchers, development engines that seek to enhance innovation opportunities and contribute to the fundamental care of mental health.

Introduction

Colombia is a country marked by various problems, among which mental health stands out. According to the Ministry of Health and Social Protection (2015), between 50% and 80% of the population reported having suffered at least one traumatic experience intense enough to generate a mental disorder such as post-traumatic stress disorder. This is further highlighted in the Colombian Caribbean, northern region of Colombia. Only in Magdalena, one of the counties, in 2018, it was reported that 33.81% of people had been treated at least once in mental health services, representing a figure of 6,609 people out of 19,548 registered (Integrated Social Protection Information System, 2018).

However, one of the main challenges in this area is to achieve greater accessibility and scope in care that allows a greater impact on the various communities (Rojas-Bernal et al., 2018) especially during contexts with difficulties at the social, economic, and educational level, as the Colombian Caribbean presents. In this sense, technology is postulated as a great tool that can enable accessibility, but that can collide head-on with the problems of a developing region. This is where research, science, innovation, and cooperation together with the human capital of young scientists can make a difference.

Presentation

As Figueroa and Aguilera (2020) point out, the pandemic ended up strengthening both a prevailing problem in mental health and the need for the use of alternatives to physical contact, making technological tools visible with greater relevance as part of the expansion of care resources. This is especially given the great opportunities and potentialities of the field, but with its consequent challenges and limitations as pointed out by authors such as Mohr et al. (2013). This represented a starting point where research from young people comes to give a fundamental contribution.

The Cognition and Education Research Group has promoted the linkage, training and development of young researchers and the continuous renewal of processes based on their constructive reflections. That is why, thanks to this effort, several young people have gathered in the group and have proposed or supported the construction of various initiatives seeking to promote mental health from technological innovation, thus promoting interdisciplinarity and scientific development from participatory action.

Within the framework of this renewal and from the subline of the group in *Technologies, cognition, education and health*, some of the many efforts promoted, built and / or supported by young researchers stand out:

- *Saludablemente Project*: development of a web application for the promotion of health and the prevention of gender violence in university students in the framework of the pandemic, oriented from a psychoeducation approach. Funded by the University of Magdalena, this piloting based on technologies, was one of the main backgrounds for the development of subsequent works that strengthened the development of the line of research in technology and mental health and the support of young scientists among psychologists and engineers.
- *DigitalMente Project*: funded by the Ministry of Science, Technology, and Innovation (Minciencias) within the framework of its call for Young Talent in Health. This research strategy proposes the development of a digital platform for the promotion of mental health in young people from a community-centered co-participation approach, that is, where young people are part of the design and development of technology from the first moment. This initiative created and founded by a group of young researchers, also among psychologists and engineers, is oriented following an approach of social appropriation of knowledge where the community is the central point for an effective development of what is proposed.
- *SGR Mental Health Project*: financed by Minciencias and the National Planning Department through the General Royalty System of Colombia, this project built with fundamental contributions of young researchers and that is executed with action of the same in this, seeks the development of an integrated technological system for the promotion of mental health and attention to psychosocial problems, socio-emotional and prevention of gender violence. On the other hand, as part of the integrated effort to work on these aspects and strengthen the scientific and innovation capacities of the region, within the framework of this, the Laboratory of Cognitive Neuroscience and Psychobiology is being founded and created, with technological equipment of scarce availability in the region, to promote research and access to specialised analysis in mental health, hand in hand with the coordination, work and leadership of teachers and young researchers, who are given the responsibility but also the opportunity for training in this field.

With the above, the important influence of young people in research is highlighted. In this sense, young researchers play a fundamental role in promoting the development of new ideas, sharing knowledge with the community, creating new ties of cooperation, and constantly renewing the areas and debates that the research group faces, allowing a space for continuous and reciprocal training with teachers and other colleagues. But while these are fundamental elements, it does not neglect the various challenges that are discovered as you delve into the area and its ramifications.

Highlighting contributions from authors such as Wisniewski *et al.* (2019), it is important to remember that there is still much that is not fully explored, underdeveloped interventions, insufficient evidence and many limitations when talking about research and integration of the technological field in mental health, where the definition of protocols and guidelines is required to analyse the effectiveness of interventions and developments in these areas. At this point, given the beginnings and preliminary advances that are still being developed in this region, cooperation with colleagues and, especially, young scientists from other Latin American, Caribbean and European regions is essential, since it allows the sharing of experiences and knowledge that guide a much more developed scientific action. There is not only talk that this cooperation in the field stimulates scientific development due to the experience or background that can be provided to each other, especially when projects in this line begin to be developed, but also about the encounter between perspectives that can deepen knowledge and broaden the vision of the problems for the benefit of the communities, promoting the transfer of knowledge and the bonds that can be created, especially among young scientists who seek to enter these fields and train with clear convictions of transformation.

Conclusion

The Colombian Caribbean is a region with a cultural and historical background with profound implications that has an impact on how projects that aim to promote technological innovation at the service of better mental health care are considered and proposed. At this point, the research and promotion of young researchers is based on the development of proposals that respond to the needs of communities based on the dynamics that promote cooperative and interdisciplinary work, a point where international cooperation reinforces a space for the transfer of knowledge and experiences between realities and contexts so diverse.

Finally, the opportunities that the development of this field entails in this region are important in the framework of the promotion of innovation, science and social development, considering at the same time and preponderantly, the critical analysis of advances and recognising the limitations and challenges, promoting a responsible ethics in their consideration.

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Forename(s), Surname(s) of the Speaker

Esteban Felipe Flores Romero; Emily Betania Granadillo Castro

Title of the presentation: The education of parents as the first approach to the management of asthma in minors. Asthma Attack Project

Abstract

Asthma is one of the most common chronic non-communicable diseases, it affects children and adults in the world and its good management is essential for control. The goal, to have a healthy lifestyle for the patient and the family improving their knowledge. The Asthma Attack study found in several representatives (parents, grandparents) and participants (children, adolescents with asthma) limited access to information on asthma management at home. The open-access *Asthma Attack* (asma.uide.edu.ec) website shares simple information for asthma management through animations, videos, conversations, infographics, and blogs. The first contact is with the representatives, who inform their children and have promoted feelings of solidarity.

Introduction

Asthma affects 330 million people worldwide [1] and is the most common chronic disease of childhood [2]. Initially described as a disease of developed countries, it is now as prevalent in some Latin American countries as in countries of known high prevalence such as the United Kingdom [3]. The high rates of asthma in Latin America occur mainly in urban regions, probably associated with poverty, overcrowding and infections [4]. The 3rd phase of the International Study of Asthma and Allergies in Childhood (ISAAC) revealed that in countries with high prevalence of asthma it seems to have reached a plateau, while it continues to increase in regions with a previously low prevalence, producing a slight increase worldwide [3].



Presentation

Asthma has been recognised as a major public health problem in Latin America [4], not only because of its high prevalence, but also because of the significant associated morbidity and mortality. It is an underdiagnosed disease (lack of spirometry and peak-flow meter), basic treatments are not always available or are not affordable [3.5], and the control and monitoring of the disease, together with the use of long-term treatments, are very deficient, all aggravated by the low adherence of patients to treatment. This leads to an overload of emergency services, as asthmatic patients are treated only during acute exacerbations of their disease, with very poor control of their daily symptoms at home.

Severe asthma attacks requiring emergency care, hospital admission, or systemic corticosteroids [6] are a common source of preventable morbidity in children. These are associated with loss of lung function [7.9], anxiety in patients and their families [10], as well as high health and family care costs [11], and absenteeism from school and work. Many asthma attacks can be prevented, either by avoiding previously identified triggers or by appropriate preventive treatment. Inhaled corticosteroids (ICS) can reduce the number of asthma attacks by up to 40% [8] and may attenuate the decline in lung function associated with asthma attacks. Although poor control of daily asthma symptoms is a risk factor for asthma attacks [12], proper management of asthma does not guarantee the total absence of asthmatic attacks [13].

During the *Asthma Attack* project, a cooperative study between the United Kingdom, Brazil and Ecuador, the research team observed that several representatives in Ecuador (parents) and participants (sons and daughters) had little knowledge about asthma, what they should do in case of a crisis and what elements are useful for the management and control of asthma. From this situation that we observe in the day to day of recruitments and controls we ask ourselves how can access to basic asthma information be given continuously to the representatives and participants of the *Asthma Attack* project? The proposal is to build and sustain the *Asthma Attack website, learning together about asthma* (asma.uide.edu.ec), an open access website with information for participants and representatives about asthma management.

The website is a space to promote knowledge of the disease and the management of asthma [14] emphasising those who have to reach first, the representatives. The representatives are the ones who maintain the conversation with the health team and are the ones who transmit the medical information to their sons and daughters so that, when they arrive from their voice, they have a better understanding.

The solution is presented from various information points. From the representatives we show the empirical information that they have been acquiring over the years, we talk with the representatives in their own environments to capture how their development has been with the care of their sons and daughters, from the initial diagnosis of asthma until they entered the study. From the medical side we present the information in a playful way, with animations, educational videos, blogs and images, which facilitates the transformation of scientific knowledge into a digestible message. The presentation of information from the medical side complements the empirical knowledge of parents and sons and daughters.

Conclusion



These types of public health tools are relevant in the cooperation between Latin America, the Caribbean and the European Union, to the extent that official tools from the different regions are dealt with for their adaptation in the different countries and their different communities. Access to various documents from the European Union, Latin America or the Caribbean, as a structural basis, for example, the "Guide to self-care for asthma" [15] of the Community of Madrid or the document "Management of severe asthma: a guide of the European Respiratory Society/American Thoracic Society"[16] promotes creativity and support for the conception of ideas to strengthen health education on issues such as access to medicines and products for the management of asthma, improving access to health services, the promotion of health, among others [17].

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Forename(s), Surname(s) of the Speaker

Nicolas Torrés (*This is a work that has been woven thanks to the collaborative work of the Young Talent team of the Centro de Pensamiento disca/pacidades, corpodiversidad y corpo-disidencias- CdPdi [Center for Thought disca/pacities, corpo-diversity and corpo-dissidences]: Jessica Yaima, Paula Muñoz; Claudia Mora, Wilson Arturo Rodriguez; Nicolás Torres and Samir Cardozo*).

Title of the presentation: Encounters and disagreements of the disca/pacitated, diverse and dissident bodies with the health system in Colombia

Abstract of the presentation

This presentation talks about a project on social appropriation of knowledge in health that was advanced by the author team between 2021 and 2022 in three regions of Colombia. There we had plural meetings with a territorial focus on the relationship that the diverse, dissident population has had with the country's health system and public policies.

And all this is condensed here into three sections: one that situates and contextualises the hegemonic health scheme in Colombia; another who asks critical questions about the place of the disca, diverse and/or dissident people there; and a closure that discusses the possibilities of the country's health system and policies to do full justice to the experiences of well-being and discomfort that these people and communities dispute in such a scenario.

Presentation

The seeds of this presentation were sown at the end of 2020 when we went to the call of the Ministries of Health and Science and Technology of Colombia to investigate problems that were strategic for the

country, above all, in the face of the fulfillment of two Sustainable Development Goals (SDGs): the third, on good health and well-being; and the tenth, on reduced inequalities. And it was around that call those questions arose about the inequalities experienced by certain subjects in the Colombian health scene.

This is knowing that, as Rocío Robledo and company (2011) warn, numerous inequities persist in the country in the general system of social security in health. But also, when it is *very clear* – as Glenda Palacios and company (2021), Silvia Arenas (2018) or Viviana Vallana (2018) have already noticed – that these asymmetries strongly affect those populations that have historically been the target of multiple discriminations: such as people living with disabilities, women, Afro communities and dissidents of the sex/gender system.

These were the bases on which we managed to execute a project focused on asking about the places that these people have occupied in the Colombian health system (cf. CdPdi, 2020). A project that involved academic proposals, activism actions and advocacy strategies aimed at building political inputs felt towards emancipation in health and the radical transformation of this system for the dignification of discas, diverse and dissident lives. All this we try to explain in this presentation along three sections, as follows:

Context

Law 100 of 1993 gave rise to the current structure of health care that predominates in Colombia: one underpinned by three health insurance regimes based, mostly, on people's ability to pay. On the one hand there is the special regime that shelters the military forces or the teachers and on the other, there is the contributory regime, which is accessed by those who can afford it, and the subsidised one, to which the rest of the population is deferred.

This configuration has facilitated the entry of a market logic in the health management of the country through the figure of the EPS, or health promoting entities. These establish contractual relationships with clinics and hospitals to provide health services to people who are insured in any of the regimes.

The issue, however, is that as mentioned by Esperanza Camargo (2016) or César Pazo (2019), this model of capitalistic preponderance over health has re-produced deep inequalities, exclusions and shortcomings that have been extremely harmful when it comes to guaranteeing health dignity for the Colombian population in general.

Not only because the spirit of profit has blurred the potency of health as an inexcusable basis of the personal and collective well-being of our societies; but also, because the logic of productivity in which health has been framed has placed the system (and the people who make it up) at the service of capital—especially economic capital, rather than by reason of life and the living.

This finds a very concrete expression in the gradual precariousness that the health sector has been suffering in the country, which has been the effect of a certain desire for taylorist optimisation with which it has been sought to squeeze the processes of care, prevention, health promotion to increase the profits of those who provide health services in Colombia. Thus, the clinic has been becoming a company; the healthcare staff a factory, the individuals the clients... and health a merchandise (cf. Echeverri, 2008).

Now, resonating with the approaches of Claudia Platarrueda and company (2013), it should be reminded that in the conceptions of discomfort and well-being of a society, what is at stake is the



deployment of power fields and social configurations of inequality, resistance and domination. Thus, it can be argued that, in Colombia, all these processes of commodification of health have given rise to a particular rhetoric, which reads as problematic – and worthy of 'fix' or cure – everything that hinders the insertion of people in the logics of the labour market and the re-production of income.

And it is there that another of the pillars that characterise the hegemonic structure in health of the country is settled, which can be summarised in the insidious pretension of this system to produce functional bodies for capital and for its support. Thus, there are people who are 'worth more' to the system because it costs less to maintain it as a permanently productive subject; and there are those who are 'worth less' because sustaining their worth as labour represents a burden on that same system.

That is a very significant consequence of a deeper and equally damaging modern and colonial logic: ableism. And the fact is that, relying on the ideas of intellectual ancestors such as Adrienne Rich (1980), Julie Guthman and Melanie DuPuis (2006), Jhonatthan Maldonado (cf. IIS UNAM, 2019), Marcela Ferrari (2020) or Gavin Francis (2022), we can extend that logic to the health field, in general and to the Colombian context.

This especially if we take into account that the ableist matrix is the basis on which experiences such as disability, chronic disease, neuro-divergence, chronic pain are understood (and treated) ... and even fatness, overweight and sexual and/or gender dissent as threats to the stability of a system that promises that in the healthy, the productive, the cis-hetero, the sane or the bodily 'functional' rest happiness, success and the best ideal of life for everyone.

Findings

The research we carried out allowed us to ask questions that highlighted several of the effects that have had, both capitalistic logic and ableist logic in the dynamics of prevention, care, promotion and health care that target discas, corpodiverse and / or corpo-dissidents people and communities in several regions of the country.

From there, we managed to identify several dynamics with which these experiences have historically been violated in terms of their full enjoyment of health, such as:

- The persistence of structural inaccessibilities in almost all health care spaces for discas, diverse and / or dissident people and communities.
- The consolidation of systematic necropolitics built to the detriment of the health and well-being of the discas, diverse and dissident existences.
- A worrying lack of intersectional health programmes, plans, projects, and budgets aimed at reducing and eliminating material, symbolic and capital inequalities that affect the full access and enjoyment of health and well-being that can be ensured by discas, diverse and/or dissident people in the country—especially in territories far from urban capitals and population centers.
- The insufficiency of fair figures on disca, diverse and/or dissident health; this is linked to a scheme to produce health data that has been designed on the basis of audist, quaker, oculo-centrist, neurotypical, logocentric, psi-congruent or otherwise hegemonic and corpo-normative matrices.

Conclusions



For all these reasons, in our research it was quite clear to us that the public health policies that are in force in the country have not managed to question and transform the structures that maintain such burdensome circumstances. In any case, paradigms such as that of collective health and Latin American critical epidemiology appear in our framework as tools that allow us to imagine futures where it is possible to "overcome [the] social regime focused on the accumulation of wealth and [recognise] the incompatibility of [such] a system (...) against the construction of healthy ways of living" (Breilh, 2013, p. 14).

Starting from there we claim that, to radically change such a panorama, it is urgent to incorporate participatory and participating processes that radically transform the current logics of the health system and manage to orient it towards broader possibilities: based on practices of trust and underpinned by the revolutionary force that both fragile bodies, discas and 'sick' claim; as well as dissident experiences and non-normative lives in the field of health.

Perspectives of our work in the EU-LAC framework

Our emancipatory commitment to health resonates with positions such as those of Johanna Hedva (2018) and Marcia Couto and company (2019), which call for re-thinking and re-feeling the health system from trust, crossing, horizontality, co-work... and that call for the agency of health in a collective, broad and plural way. And all this speaks of glocal frameworks that concern both the European Union and Latin America and the Caribbean.

Catalina Devandas (2018, 2019) reminds the CIRPD, but at her side are also the SDGs (UN, 2015). And the truth is that, in order to address these frameworks with full justice, we must embrace all the fractures that the discas, diverse and dissident experiences present to the health systems that exclude, marginalise and violent them in the two regions.

In this sense, the public health policies of the European Commission can be enriched by this type of research. And, even more, all this can lead the two regions to articulate solid bets of what Isabel de la Mata (2009) called 'health citizenship', especially in order to dignify the lives, health and well-being of people and discas, diverse and / or dissident communities that inhabit both territories.

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Forename(s), Surname(s) of the Speaker

Gabriela Moreira Lima

Title of the presentation: Global Challenges: Fake News in Pandemic Times



Introduction

Fake news has become a global public health problem, as believing in fakes implies less adherence to health and vaccination protocols. Several works in the international literature show that believing in fake news reduces social engagement, whether on issues of global warming or vaccination.

For example, the case of the MMR immuniser, which already comes from a previous false process and has been reflected in the Latin American context, in the lower adherence to vaccines and consequently in the increase in cases of Measles, in addition to the issue of the current Covid-19 pandemic. And as in the case of Triple Viral defamation, which had an economic interest on the part of Dr Andrew Wakefield, the misinformation may be related to political, economic, social and cultural reasons.

Objective

The objective of the "News and Pandemic" working group is to point out some research results that show that the impacts of fake news specifically imply adherence to vaccination against Covid-19. We will bring one of the studies that brought samples under the northern context and observed this type of relationship. The study "Susceptibility to Misinformation around the world" (Roosenbeek J., 2020) indicated that the United Kingdom, Ireland, Spain, Mexico, and the United States were studied, and with their different results, they actually showed that the greater belief in fake news harms adherence to vaccination. However, Mexico and Spain had higher rates of disinformation, compared to the United Kingdom and Ireland, so our proposal is to explore this bias in a Latin American context and understand its reasons.

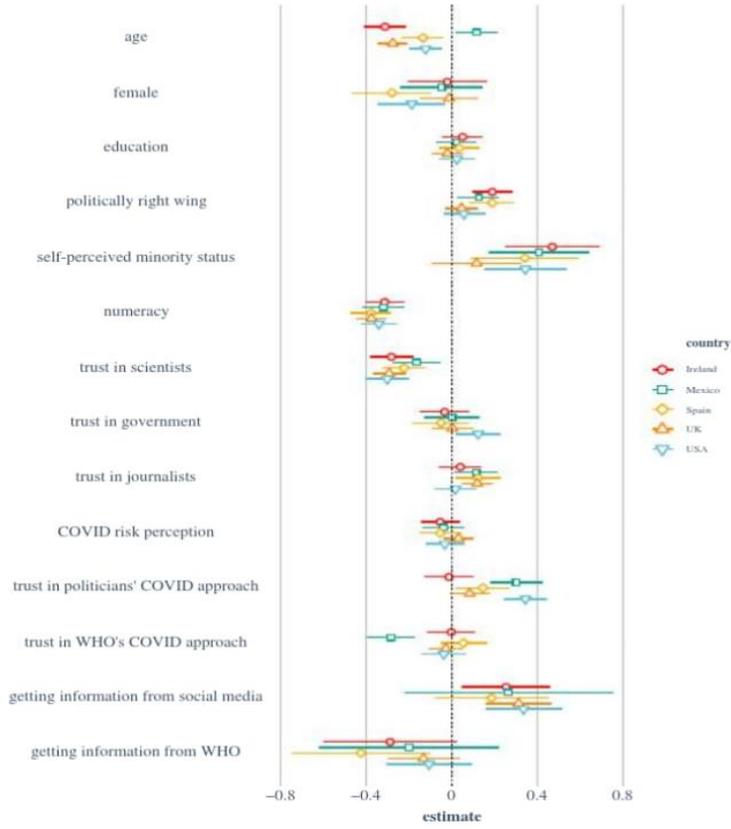


Table 1. Predictors of susceptibility to misinformation, pooled and by country.

8

country	pooled	Ireland	Mexico	Spain	UK (April)	USA
<i>N</i>	4733	643	644	664	1005	673
<i>R</i> ²	0.23	0.28	0.21	0.21	0.24	0.36
<i>F</i>	102.11	17.73	11.75	12.13	23.76	27.50
(intercept)	2.30*** [2.21, 2.40]	2.40*** [2.08, 2.73]	2.64*** [2.05, 3.23]	2.95*** [2.62, 3.28]	2.17*** [2.00, 2.34]	2.21*** [2.01, 2.42]
age	-0.21** [-0.24, -0.17]	-0.31** [-0.41, -0.21]	0.12* [0.02, 0.21]	-0.13* [-0.23, -0.04]	-0.28** [-0.35, -0.20]	-0.12* [-0.20, -0.04]
female	-0.16** [-0.23, -0.10]	-0.02 [-0.21, 0.17]	-0.05 [-0.24, 0.15]	-0.28* [-0.47, -0.09]	-0.01 [-0.15, 0.13]	-0.19* [-0.34, -0.03]
education	0.04* [0.00, 0.07]	0.05 [-0.04, 0.15]	0.02 [-0.08, 0.12]	0.03 [-0.06, 0.13]	-0.02 [-0.09, 0.05]	0.03 [-0.06, 0.11]
politically right wing	0.09** [0.05, 0.12]	0.19** [0.10, 0.28]	0.13* [0.03, 0.23]	0.19** [0.09, 0.30]	0.05 [-0.03, 0.13]	0.06 [-0.04, 0.16]
self-perceived minority status	0.38** [0.29, 0.47]	0.47** [0.25, 0.69]	0.41** [0.17, 0.64]	0.34** [0.1, 0.60]	0.12 [-0.09, 0.32]	0.35** [0.15, 0.54]
numeracy	-0.40** [-0.43, -0.36]	-0.31** [-0.41, -0.22]	-0.32** [-0.42, -0.22]	-0.38** [-0.47, -0.28]	-0.37** [-0.45, -0.30]	-0.34** [-0.42, -0.26]
trust in scientists	-0.24** [-0.27, -0.20]	-0.28** [-0.38, -0.18]	-0.16* [-0.28, -0.05]	-0.22** [-0.33, -0.12]	-0.29** [-0.37, -0.21]	-0.30** [-0.40, -0.20]
trust in government	-0.01 [-0.05, 0.04]	-0.03 [-0.15, 0.08]	0.00 [-0.13, 0.13]	-0.05 [-0.18, 0.08]	0.00 [-0.09, 0.10]	0.12* [0.02, 0.23]
trust in journalists	0.11** [0.07, 0.15]	0.04 [-0.06, 0.14]	0.11* [0.01, 0.22]	0.12* [0.02, 0.23]	0.12** [0.05, 0.19]	0.02 [-0.08, 0.12]
COVID risk perception	-0.02 [-0.06, 0.01]	-0.05 [-0.15, 0.04]	-0.04 [-0.14, 0.06]	-0.05 [-0.15, 0.05]	0.03 [-0.04, 0.10]	-0.03 [-0.12, 0.06]
trust in politicians' COVID approach	0.14** [0.10, 0.19]	-0.01 [-0.13, 0.11]	0.30** [0.18, 0.43]	0.15* [0.02, 0.27]	0.08 [-0.01, 0.18]	0.35** [0.24, 0.45]
trust in WHO's COVID approach	-0.08** [-0.12, -0.04]	-0.00 [-0.11, 0.11]	-0.28** [-0.40, -0.17]	0.06 [-0.05, 0.16]	-0.03 [-0.11, 0.06]	-0.04 [-0.14, 0.07]
getting information from social media	0.35** [0.27, 0.43]	0.25* [0.05, 0.46]	0.27 [-0.22, 0.75]	0.19 [-0.08, 0.45]	0.31** [0.16, 0.47]	0.34** [0.16, 0.51]
getting information from WHO	-0.14** [-0.23, -0.04]	-0.29 [-0.60, 0.03]	-0.20 [-0.62, 0.22]	-0.42* [-0.75, -0.10]	-0.13 [-0.30, 0.04]	-0.11 [-0.30, 0.09]

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Beta values are standardized and 95% confidence intervals are provided in parentheses. Significant predictors are marked in bold.³⁰

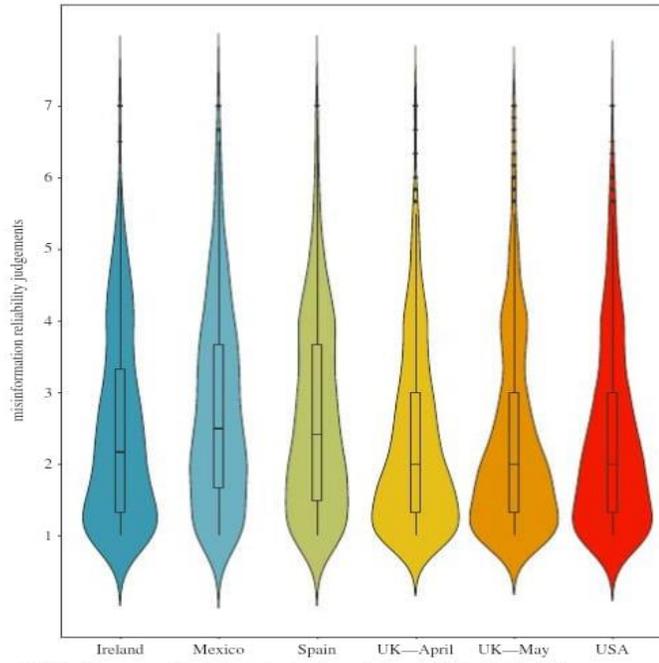


Figure 1. Reliability judgements of the six-item misinformation scale about COVID-19 (1–7 Likert) by country.

Table 2. Predictors of compliance with health guidance, pooled and by country.

country	pooled	Ireland	Mexico	Spain	UK	USA
N	4745	644	645	665	1007	673
R ²	0.08	0.07	0.11	0.06	0.07	0.12
F	53.11	7.21	10.02	6.52	8.73	12.66
(intercept)	6.96*** [6.85, 7.10]	6.87*** [6.59, 7.15]	8.23*** [7.95, 8.51]	7.42*** [7.12, 7.72]	6.45*** [6.22, 6.68]	7.23*** [6.92, 7.55]
age	0.20*** [0.13, 0.28]	0.35*** [0.15, 0.55]	0.53*** [0.35, 0.71]	0.09 [-0.12, 0.30]	0.23** [0.07, 0.40]	0.20 [-0.01, 0.40]
female	0.86*** [0.71, 1.00]	1.09*** [0.72, 1.46]	0.70*** [0.33, 1.06]	0.62** [0.21, 1.03]	0.948*** [0.64, 1.254]	1.00*** [0.60, 1.41]
education	0.25*** [0.17, 0.32]	0.01 [-0.17, 0.20]	0.05 [-0.14, 0.23]	0.07 [-0.14, 0.27]	0.19* [0.03, 0.35]	0.26* [0.05, 0.47]
politically right wing	0.03 [-0.04, 0.11]	-0.11 [-0.29, 0.07]	0.05 [-0.13, 0.24]	0.40*** [0.20, 0.61]	0.20* [0.04, 0.35]	-0.14 [-0.36, 0.08]
self-perceived minority status	0.35*** [0.15, 0.54]	0.56* [0.11, 1.02]	0.20 [-0.24, 0.65]	0.40 [-0.16, 0.96]	0.23 [-0.23, 0.70]	0.05 [-0.45, 0.54]
numeracy	0.10* [0.02, 0.18]	0.26** [0.07, 0.45]	0.12 [-0.07, 0.31]	0.03 [-0.19, 0.25]	0.16 [-0.01, 0.33]	0.12 [-0.10, 0.34]
trust in scientists	0.44*** [0.36, 0.51]	0.07 [-0.12, 0.26]	0.31** [0.12, 0.50]	0.37*** [0.16, 0.58]	0.23** [0.07, 0.40]	0.52*** [0.30, 0.75]
misinformation susceptibility	-0.17*** [-0.26, -0.09]	-0.10 [-0.31, 0.10]	-0.42*** [-0.61, -0.22]	-0.35** [-0.58, -0.13]	-0.01 [-0.18, 0.17]	-0.28* [-0.51, -0.05]

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Beta values are standardized and 95% confidence intervals are provided in parentheses. Significant predictors are marked in bold.¹⁰

Conclusion

Therefore, this is a debate that must be fostered from a perspective of Public Health and democracy, because if the mechanisms to combat fake news do not advance, these proactive movements tend to compromise life in society.

What we are observing, less than 50% of vaccinated children in Brazil have received the 1st dose, not even half were vaccinated ([learn more](#)) and, consequently, the average Brazilian mortality exceeded 800 deaths/day in February. Apart from that, the newspapers themselves point out that the Caribbean countries are in an unequal fight against Covid-19, in terms of vaccination ([learn more](#)).

Invitation

The members of the group "News and Pandemic" (professionals Daniel Calbino Pinheiro, Cibele Aparecida de Moraes and student Gabriela Moeira Lima) want to propose that at the end of this programme, in which there will be debates and groups, we hope that this work will be contemplated and that there will be the creation of a network of young researchers interested to investigate the impacts of Fake News on the process of adherence to vaccination and COVID-19 health measures, in order to carry out quantitative and qualitative research that explores the reality of Latin American and Caribbean countries. As a result, it is proposed to generate scientific data that allow comparisons to be made based on their similarities or singularities with the research carried out on the subject in the countries of North America and Europe.



Thematic Session 5: Public Health (II)

Forename(s), Surname(s) of the Speaker

Lívia da Costa Lemos

Title of the presentation: Implementation of a center for reception and dental trauma care of minorities, women and LGBTQIA+ POPULATION, WITH HISTORY OF OROFACIAL AGGRESSION

Abstract

We live in times of struggle for rights and social equality and, unfortunately, we live in a society that still presents the most different types of violence. There are many cases of dentists who experience, in their practice, urgent, emergency and rehabilitation care for people who are victims of violence and many times, cannot afford the treatment costs. The present project is an innovative proposal in the academic environment that seeks to provide urgent clinical dental care to women and the LGBTQIA+ community victims of physical aggression with oral trauma, seeking rehabilitation in the different skills and specialisations available in the dental clinics of the University of Grande Rio (UNIGRANRIO), aiming to rehabilitate these victims aesthetically and functionally.

Introduction

Our project is an innovative proposal in the academic environment. Our goal is to provide urgent clinical care to women and the LGBTQIQ community victims of physical aggression. By physical aggression I mean assaults: oral traumatic injuries looking for oral rehabilitation. In this perspective, we will provide oral rehabilitation of patients from a social minority and in disadvantaged socioeconomic conditions.

Main section

Nowadays the society is fighting for rights and social equality and unfortunately, in a social globe that still has different types of violence, intolerance and disrespect. According to The Economic Commission for Latin America and the Caribbean (CEPAL), women and minorities had an increase in cases of aggression during the social isolation caused by the pandemic. There are many cases of dentists who experience in their day-by-day work clinical cases of urgent, emergency and rehabilitation care of violence. Those patients most of the time can't afford clinical treatment. Unfortunately, at clinics and hospitals there are professionals who aren't prepared to report suspected and confirmed cases of ill-treatment to the authorities.

Developing main ideas

CEPAL revealed that aggression rates increased the most during the social isolation caused by COVID-19. Women who stayed at home suffered more aggressions. Traumatic Dental reception flow starts when we receive the ill patient step, named by triage. To continue, the professional will analyse the oral condition to suggest treatment. Periodontitis step includes health treatment and recovery. If



necessary, the oral surgery will happen to patients who require oral reconstruction and rehabilitation (cases of violence that compromise the functioning and aesthetics of the patient). To finish, the fifth step was created to help mental health and ensure patient safety and emotional stability post trauma.

In conclusion: This project brings an advantage to the community because it's a reception for this minority that has a treatment accompanied by trained professionals and a free quality service. It's important to expose the glaring lack of data for aggression by minorities, which don't have as much representation as the situation needs. Global awareness, showing those existing issues about violence and not treatment accessible as well as no solution to aggressors. It can also be used as a replication of the project in the global community, for example as a basis for other projects.

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Forename(s), Surname(s) of the Speaker

Luz Marina Llangarí Arizo

Title of the presentation: Women sex workers and sexually transmitted diseases: academia's contributions to the 2030 agenda for sustainable development

Abstract

Sexually transmitted diseases (STDs) are a major cause of morbidity globally. Despite advances in diagnosis and treatment, the prevalence and incidence of some STDs remain high in specific populations such as women sex workers. To control these infections and guarantee access to health services, it is necessary to approach these populations, to know what factors expose them to greater risk. The collaborative and interdisciplinary project STD ECU, between the academic community (Ecuador / England) and these populations, provides information to strengthen prevention, diagnosis and treatment strategies and contributes to equality, a key point of the Sustainable Development Goals.

Presentation

Sexually transmitted diseases (STDs) are a threat to public health in the world, affecting sexual and reproductive health. In women, these diseases are associated with pelvic inflammatory disease, infertility, pregnancy complications, abortions, premature births, stillbirths, cancer, or increased risk of contracting HIV.(1,2)

Although progress has been made in the diagnosis and treatment of many STDs in recent years, this progress has been uneven and new health problems related to STDs have emerged. Some groups of the population still have high percentages of prevalence and incidence and others do not access diagnosis and treatment, so the real situation of STDs is unknown. (1,3)(4,5) For some STDs such as gonorrhea, treatments are no longer effective due to antimicrobial resistance. (6,7)

Women sex workers (WSWs) constitute one of the population groups with the highest risk of STDs due to individual, structural and social factors. Those of reproductive age and with few economic resources who have a lower level may be more exposed to inequalities of power in sexual relations, gender-based violence and to face obstacles that prevent their access to sexual and reproductive health services. Sex work exposes them to unsafe, violent environments, as well as stigma and discrimination limit many of their abilities and distance them from prevention, care and treatment programmes.(5,8)(9–11)(12–15)

The path towards the Sustainable Development Goals in terms of sexual and reproductive health and ending discrimination against women requires a joint work of all actors in society, with an adequate management of resources focused on the most vulnerable populations.(16)

Our project is born from the common interest and collaborative work of the International University of Ecuador, St. George's University of London and the Grups de Recerca d'Amèrica i Àfrica Llatines (GRAAL)-Spain to understand the behaviour and reduce the knowledge gap of STDs in vulnerable populations.

In Ecuador, official data on the status of STDs are limited, so the project focused on studying STDs (gonorrhea, chlamydia, trichomoniasis, *Mycoplasma genitalium* and syphilis) in WSW in different locations in Ecuador.

The research was carried out in two phases: i) Estimation of the prevalence of STDs and factors related to sexual risk practices in WSW who attend a primary care center in Quito, 2017. ii) Estimation of the prevalence of STDs, genital and extra genital, sexual risk practices and related factors in female populations of three locations of the Ecuadorian coast, 2018-2020.

Each of the phases has a protocol, informed consent for participation and collection and conservation of samples approved by an ethics committee for studies of human beings and by the Ministry of Public

Health (MPS). For the fieldwork, previous visits were carried out in which the activities were organised with the WSW, the owners of the places where sex work is carried out, the administrative and health staff of the MPH. In addition, in each of the locations a temporary space was adapted for the application of the survey, sampling, processing and storage (refrigeration).

The identification of STDs was carried out with molecular and serological tests. For the delivery of results, each participant was contacted, in the case of positive results the delivery of the treatment was coordinated with the health centres of each location. Sessions were also organised to present the result obtained from the analysis of the survey to all the actors involved in the project.

The first phase showed that, although WSW know the importance of condom use, 22.5% reported having had sex (vaginal, or oral) without a condom at some time during sex work, in addition, 3 out of ten WSW migrate temporarily due to sex work. The prevalence of STDs was 17.6% (95% CI 13.3%–22.8%), the most frequent was trichomoniasis (17).

The second phase showed that 9 out of 10 women migrate through sex work, 3 out of 10 have been forced to have sex at some point in their lives, 3% reported having had sex (vaginal, or oral) without a condom at some time with a client, while 95% with their partner. The prevalence of vaginal STDs was 19% (95% CI 13.0%-23.6%), the most frequent were trichomoniasis and *M. genitalium*. The prevalence of anal STDs was 20% (95% CI 13.2%-26.1%), and the prevalence of oral STDs was 2.4% (95% CI 0.5-4.3), in both cases the most prevalent was chlamydia.

Conclusion

To improve the health and well-being of WSW, achieving STD control and prevention is important to understand the different contexts. The academy is an important actor since through its projects and research networks it can identify and shorten the existing knowledge gaps, working hand in hand with the populations and their environment always guaranteeing their rights.

Our project shows the situation of STDs in women sex workers, each phase provided information that allowed us to expand our research interests and reformulate some already raised, in addition to strengthening our ties of collaboration between the different national and international institutions. Now, we work to maintain and expand our collaboration to share our experiences.

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Forename(s), Surname(s) of the Speaker

Ariadna Feliu

Title of the presentation: The World Code Against Cancer Framework: Examples from the European Union and Latin America and the Caribbean

Abstract

Prevention offers the greatest public health potential and the most cost-effective long-term cancer control strategy. The World Code Against Cancer Framework is based on evidence synthesis and evaluation of risk factors and effective medical interventions to translate it into recommendations. Regional Codes are developed independently but using a common methodology that allows adaptation to differences in risk factors, cancer patterns and socioeconomic conditions. These Codes offer an exceptional public health tool to guide governments in implementing cancer control strategies, educate the population on healthy behaviours and encourage their participation in prevention programmes. This framework has been applied to the EU and Latin America and the Caribbean, which Code is under development.

Introduction

Cancer is a major public health problem accounting for nearly 10 million deaths in 2020 worldwide (1). However, there remain large regional differences in cancer burden (2), that may reflect a wide variety of social and epidemiological factors, exposure to different risk factors (including lifestyles habits), and access to health services. As per the knowledge we have today, between 30-50% of all cancer cases may be preventable. Prevention offers the greatest public health potential and the most cost-effective long-term cancer control strategy (3).

Evidence-based recommendations are a key cancer prevention tool; however, in today's multiple media streams messages are often confusing, ambiguous, overwhelming, or even contradictory. The European Code Against Cancer (ECAC) is a set of evidence-based recommendations on how to reduce cancer risk. The ECAC provides an authoritative source of advice that informs the public to adopt behaviours to reduce their cancer risk and participate in organised intervention programmes and stakeholders to guide national health policies in cancer prevention (4).

The experience of developing and promoting the 4th edition of the European Code Against Cancer has provided the methodology and tools for the development of guidelines for other regions in the world. In other words, this tool offers an excellent basis for scaling up to a World Code Against Cancer Framework to adapt the Code to different defined regions of the world tailored to specific cancer patterns, associated risk factors, cultural characteristics, health systems capacity, and prevention priorities for the region (5).

Main Idea

The World Code Against Cancer Framework (<https://cancer-code-world.iarc.who.int/>) is an initiative based on the synthesis and evaluation of the evidence on lifestyle, environmental, occupational, and infectious risk factors, and effective medical interventions, to translate this evidence into

recommendations on cancer primary and secondary prevention at the individual and population levels. Under the overall umbrella of a World Code Against Cancer Framework, using the methodology established by the International Agency for Research on Cancer (IARC) and the experience of the European Code Against Cancer (ECAC) 4th edition (4,6), Regional Codes Against Cancer are being developed to promote cancer prevention globally.

Each Regional Code Against Cancer will consist of a set of cancer prevention recommendations, suited to the epidemiological, socioeconomic, and cultural conditions in that region, and adapted to the availability and accessibility of healthcare systems' portfolios of services. These Codes will focus on regions that are sufficiently large but also distinct enough to merit the development of versions adapted to differences in risk factors and cancer patterns, and socioeconomic and cultural conditions (e.g., Latin America and the Caribbean, South-East Asia, East Africa). The Latin America and the Caribbean (LAC) Code Against Cancer is the first regional adaptation of the ECAC, under the umbrella of this framework.

Lessons learned and experiences from developing, implementing, and disseminating the European Code Against Cancer are guiding and will continue to guide the adaptation process to the Latin American and the Caribbean region.

One of the features of the ECAC 4th edition was its development by leading cancer experts from the Europe, helping ensure its focus was on the most relevant regional factors and effective target audiences. Hence, encouraging ownership of the Code is key to increasing its public engagement, its political impact, and the endorsement and support by all regional leaders in cancer prevention (5). For these reasons, a coalition of institutions and international organisations with more than 60 experts across LAC are currently involved in the project (7).

Another knowledge transfer opportunity to adopt from one region to another is the Youth Ambassadors programme. National promotion and dissemination of the European Code has been coordinated by the Association of European Cancer Leagues. A special mention should be made to its programme “Youth Ambassadors for the European Code Against Cancer”. The aim of this initiative is to bring together highly motivated students and young professionals from European countries to train them to become future cancer prevention leaders and advocates at both national and international levels. The described initiative has been an outstanding instrument to support the European Code dissemination process by helping raise awareness of the 12 recommendations to reduce cancer risk (8). This successful model could be mimicked in Latin America and the Caribbean not only to steer the dissemination of the LAC Code after its launch but also to build a unique network of young leaders on cancer prevention in the region.

Conclusion

The World Code Against Cancer Framework offers a great opportunity to promote cancer prevention globally. This framework has been applied to the EU and Latin America and the Caribbean where a Regional Code is currently under development. Lessons learned and experience from the European Code Against Cancer 4th edition offer knowledge transfer and networking opportunities from one region to another that will go beyond its development process extending it also to the implementation and dissemination.

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Forename(s), Surname(s) of the Speaker

Daniel Andrés Vargas Tejada

Co-authors:

David Chalarca Cañas; Oscar Jairo Valencia Ocampo; Margarita María Velásquez Lopera

Title: Biobanks: conservation of the scientific heritage of humanity

Abstract

A biobank is a public or private organisation, non-profit, that has collections of biological samples with associated information under standardised and quality parameters, whose purpose is human health research (1). It allows to keep in optimal conditions the biological samples facilitating their use in the understanding of the diseases, in order to propose strategies of detection, prevention, promotion and treatment.

The Dermatopathology Laboratory of the Faculty of Medicine of the UdeA has processed more than 57,000 biopsies since its foundation, preserving multiple files, giving it great potential as a biobank.

We want to give an overview of biobanks, as their creation is a challenge to include normative, legal, ethical, and scientific axes.

Presentation

A narrative review of the literature between 1 January 2010 and 31 December 2020 was carried out with specific terms using the PUBMED and google scholar search engine under the advice of librarianship of the Faculty of Medicine of the University of Antioquia and the tutors. Once the information that will lay the foundations for the execution of the project was obtained, emphasis was placed on current legislation, informed consent, global, Latin American, Colombian, governance, and its requirements.

Regulation

The activities of biobanks are regulated internationally by normative documents on the management of biological samples and associated data such as *UNESCO's 2003 International Declaration on Human Genetic Data*, among others. Guidelines have also been created that address ethical issues with the aim of defending the rights of patients participating in scientific research in health such as *Human Tissue and Biological Samples for use in Research - Medical Research Council in the United Kingdom in 2001*, among others (2).

Regulation and legislation began in Europe, with the adoption of the *Icelandic Biobanks Act* in 2002 and countries such as Sweden, Norway, Finland, Estonia, the United Kingdom, and Spain have been adopting regulations (3). Spain is the country with the most robust specific legislation to handle human biological material in research and in patients' rights.

Overview

Biobanks can collaborate in the form of a biobank in a network, network of biobanks or network of networks (4). They are currently organised into international networks that seek cooperation in research and access to samples through their members (5-6). The European Network of Infrastructures in Biobanks and Biomolecular Resources has 664 members located in Europe. Another is EuroBioBank which has 25 biobanks (7), being one of the 10 large-scale around the world (8). One study characterised the biobanks in the United States and by 2013 it had 636 (9).

In Latin America, scientific publications are scarce, according to *Scopus* they are only 2.3%, mostly carried out by Brazil and Mexico (10). Brazil is the Latin American country with the best regulation and has an accreditation system (11). In the case of the Mexican legal framework, it does not have specific legislation, but its regulations, which apply to medical research and the handling of biological samples, serve as the basis for the organisation and its proper governance (12). It is the same case of Chile that despite having 9 biobanks for research purposes (13), does not have regulatory uniformity (14). By 2015, Panama's biobanks did not have specific regulation (15) and by 2018, Argentina did not have a specific regulation (11). There are no reports of biobanks in Guatemala, although donors are recruited for international biomedical research (15).

Colombia has 7 entities that approach the biobank model although it does not have specific regulations for these. However, there are rules that regulate blood banks, the ethical and legal aspects of research on human beings, the right to privacy and informed consent, which could be applied to their establishment. Colombia's Bill No. 168 of 2019 since 2017 began as an initiative to regulate them, is based on international legislation with the aim of regulating their constitution and creating national networks to achieve scientific and technical cooperation, in addition, it includes the necessary components for the registration of these (1). It is currently being submitted to congress.

Biobanks take on the role of gatekeepers of donors' personal data, their protocols for handling clinical information, samples and governance must be reviewed by a medical ethics committee. Informed consent being the basis of respect, transparency and rights of the source subjects. It is based on the need for the patient to have the necessary skills for full understanding and that there is no coercion in decision-making. There are different types of informed consent and it is important to keep in mind the advantages and disadvantages of each of them, since the choice of it must be adjusted to the needs of each biobank, its socio-economic context, researchers and donors and the projections they have in the short, medium and long term (16).

Conclusion

Biobanks have emerged as a cutting-edge strategy that has a high potential for conducting biomedical research, being significantly valuable in the study of various diseases.

Although in Colombia and many Latin American countries there is no specific legislation for biobanks, the existing regulations of the respective country could be adapted for the establishment and implementation of these, providing a solution to the ethical problems that may arise until a normativity can be established that allows a better coupling between research with biological samples and respect for the rights of donors. The above is only one of the components that must be regulated, all procedures, management systems and guidelines must be protocolised to access its use and thus guarantee uniformity.

In addition, research supported by biobanks should be focused on diseases that affect populations and the results obtained, accompanied by policies to impact people's health. If we connect via networks of biobanks according to the objectives of the research, we could strengthen the field of translational medicine and propose strategies for detection, prevention, promotion and treatment.

Finally, it is very important to choose an informed consent according to the governance of the biobank and that has donors as the protagonist, so this process will depend on the needs, socioeconomic context, researchers, donors and projections of the biobank in the short, medium and long term, without neglecting the ethical rigor that it implies.

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Forename(s), Surname(s) of the Speaker

Camila Abbondanzieri

Title of the presentation: Argentina's South-South cooperation in the context of the pandemic: addressing vaccine donations, technical cooperation as strategies to overcome the health crisis

Abstract

Argentina's South-South cooperation strategy in health matters within the framework of the crisis of the multilateral system is analysed. Since the outbreak of the pandemic, Argentina has designed an international cooperative strategy based on its local health and scientific heritage and in opposition to contrary trends present in the subregional area. The profile of Argentine international cooperation through the donation of vaccines and technical cooperation aimed at a group of countries of the Global South in the context of the crisis of regional multilateralism will be described. It is argued that the actions designed from the scientific and academic field represent a primary asset for the formulation of public policies and for the structuring of strategic international linkages.

Introduction

The implications of the COVID-19 pandemic for international cooperation are complex and involve both structural and conjunctural factors. Among the former, the context of multilateralism in crisis (global and regional) stands out, which continues to generate limitations and limit the options for the development of concerted actions between different actors. Among the latter, it is emphasised that the problems and challenges posed by the pandemic (in terms of health, economic-productive, social, etc.) required urgent action rates, either to contain the advance of infections or to accelerate vaccination plans.

In the absence of consolidated spaces for political consultation in which joint proposals are drawn up in the short term, and in the face of the urgency to find solutions given by the health, economic and social vicissitudes imposed by the pandemic, it is affirmed that the alternatives of international cooperation of the States do not disappear completely, but it is pointed out that these are restricted to a few options. In this context, there is evidence of a re-emergence of bilateralism as a practice of linking the dynamics of international cooperation. In the case of Argentina, this trend is combined with a recovery of South-South cooperation schemes reflected, on the one hand, in the commitment to strengthen scientific-technological cooperation aimed at the production of vaccines with Mexico and, on the other, in the deployment of a set of vaccine donations and technical cooperation destined to various countries of the Global South.

The profile of Argentina's South-South cooperation in the context of the pandemic

Regarding the definition, or scope, of South-South cooperation, there are basically two broad interpretations. The first, more comprehensive and general, defines South-South cooperation as an "essentially political cooperation that aims to strengthen bilateral relations and/or form coalitions in multilateral forums, in order to obtain greater joint bargaining power" (Lechini, 2009: 99). The second, more limited and technical, defines it as "any process by which two developing countries acquire individual or collective capacities through cooperative exchanges in knowledge, qualification, resources and technological know-how" (SEGIB, 2008: 16).

That is, on the one hand, there are perspectives that understand South-South cooperation clearly as a platform for mutual exchanges in terms of economic or technological issues; and, on the other hand, those that consider it a much broader process that investigates the sum of forces to achieve long-term results in all state spheres are identified (Pereyra Doval, 2010). In any case, despite the different approaches prioritised by each of the two interpretations, in practice it can be said that the political, economic and technical dimensions are interrelated and linked in the paradigm of South-South cooperation (Lechini, 2009).

Regarding South-South cooperation in Argentina in the twenty-first century, it is highlighted that it became a priority in the discourse of the Peronist governments of the XXI century (2003-2015 and 2019-present) and its actions maintained a constancy in practice, only interrupted by the four-year impasse of the Macri administration (2015-2019). In the period 2003-2015, Argentine diplomacy strengthened regional multilateral bodies to try to gain greater margins of autonomy in international negotiations by articulating technical cooperation with politics to increase its international presence – although always hand in hand with Brazil as regional leader. The latter began to change from 2015, the year in

which the turn to the right begins to be evident in the region and was subsequently deepened with the implosion of the Covid-19 pandemic.

In the current scenario, the bilateral South-South cooperation promoted by Argentina towards Mexico and towards different countries of the Global South represent fundamental components to materialise the new foreign policy strategy of the administration of Alberto Fernández. In it, the health dimension acquires a preponderant role and is a fundamental asset for Argentina to project assertive cooperative relations with a wide range of actors.

Scientific-technological cooperation with Mexico

The process of rapprochement between the two countries began to be outlined prior to the outbreak of the pandemic, when the recently elected President Alberto Fernández made his first official visit to Mexico in November 2019. Subsequently, the challenges imposed by COVID-19 laid the foundations for both countries to find in scientific-technological cooperation an area of convergence of their own interests and a platform from which the paralysed multilateral scene in the region can be transformed. In August 2020, the production chain that integrated both Mexican and Argentine actors to produce the AstraZeneca vaccine was formed. Under the agreement, mAbxience (Argentine laboratory) produces the active substance of the vaccine and Liomont (Mexican laboratory) packages it (Blinder et al., 2021). The official announcement of the launch of the new stage in bilateral scientific-technological cooperation with Mexico took place on 7 January 2022 within the framework of the XXII Meeting of Ministers of Foreign Affairs of CELAC in Buenos Aires after Mexico transferred its Pro Tempore Presidency to Argentina by unanimous vote. The allusion to cooperation in vaccines was accompanied by the deepening of joint actions in other areas that include Latin American space, understanding these aspects as fundamental components of the respective national projects and their sovereignties.

Vaccine donations and technical cooperation in the Global South

At the global level, one of the international cooperation schemes that prevailed during the pandemic years was the donation of vaccines and various health materials. It is important to note that in a scenario in which all countries were affected by COVID-19 infections, the traditional roles of cooperation were blurred, and, to some extent, all actors performed both as recipients and suppliers of medical equipment, technology exchange and know-how. As will be addressed below, such a statement can be applied directly to the Argentine case, in which its dual role, that is, as a recipient and offeror, in international cooperation was once again revealed (Morasso, 2011).

As a recipient country, Argentina obtained more than 7 million doses that allowed it to accelerate the internal vaccination plan. The group of bidders was rather varied and different aspects that motivated the donations can be highlighted. On the one hand, it identifies the arrival of vaccines by producing countries such as the United States, which, in July 2021, sent 3.5 million Moderna vaccines. On the other hand, the importance of historical and cultural ties is evident, as in the case of Spain, which, through the COVAX mechanism, allocated a batch of 960,400 doses of AstraZeneca to Argentina (PAHO, 10/12/2021).

As a bidding country, Argentina is deploying an intense strategy of vaccine donations along with the offer of technical cooperation to various countries of the Global South with which it already maintains

significant relationships or with which it intends to deepen its links. These actions allow the country to project an active role in the dynamics of international cooperation that, in turn, can result in benefits to obtain a series of fundamental political objectives of the Fernández administration: on the one hand, to achieve political support for the renegotiation of the debt with the IMF and, in this sense, CELAC's pro tempore presidency represents a platform for revitalising regional consultation bodies; and, on the other hand, to deepen trade linkages that allow improving foreign exchange earnings to the country.

It is important to note that, in the international strategy of donation of Argentine vaccines, the bilateral link with Mexico acquires a decisive importance since all the doses offered in the Global South are Argentine production of AstraZeneca. That is, the scientific-technological projection seals the commitment to reactivate functional relations to Argentine foreign policy and this enables the country to expand its horizon of linkages from the paradigm of South-South Cooperation, combining various schemes such as technical cooperation with donations.

Until February 2022, recipients of Argentine vaccine donations can be grouped into: regional-bilateral, bilateral-extra-regional and regional bloc relationships. These linkages involve vaccine donations and, in some cases, technical cooperation initiatives. By mid-January 2022, 1.7 million doses of AstraZeneca vaccines were donated in the so-called "Strategy of international reciprocity and solidarity aimed at equitable access to vaccines" (Argentine Foreign Ministry, 01/12/2022). Thus, Argentine vaccine donations between November 2021 and January 2022 were as follows: Egypt (12 January 2022: 1 million); Philippines (23 December 2021: 500,000); Bolivia (20 December 2021: 1 million); Kenya (7 December 2021: 400,000); Barbados (3 December 2021: 30,000); Angola (2 December 2021: 350,000); Organisation of Eastern Caribbean States (OECS) (1 December 2021: 42,000); Mozambique (26 November 2021: 450 000) and Vietnam (24 November 2021: 500 000).

Conclusion

Despite the obstacles imposed by the context of weakening multilateralism, the pandemic, representing a global challenge that affected practically all international actors, led to question the scope of unilateral measures and to rethink ways of republishing concerted actions. In the case of Argentina, the effects of the pandemic were interspersed with a set of agenda items that condition the country's actions in the international arena and, in that sense, the search for an assertive and diversified international positioning became an objective of domestic policy.

Looking ahead, it will be important to monitor the actions that derive from the Argentine cooperation strategy. It would be desirable that the links established because of the donation of health material and technical cooperation with several countries of the Global South transcend the current situation and represent a new instance to deepen these relations in dimensions such as political, economic, social and cultural. Likewise, it is desirable that, based on these ties that were strengthened in a context of crisis, other logics be transformed in which exchanges can assume new modalities that are mutually beneficial for Argentina and its counterparts.

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Thematic Session 6: Open, Inclusive and Citizen Science

Forename(s), Surname(s) of the Speaker

José Eduardo León Rojas

Title of the presentation: Open and inclusive science during pandemic times. COVID19-EC Group: your coronavirus information pill

Abstract

The importance of open science was recently exemplified thanks to COVID-19. Maintaining the affordability model for scientific articles would have meant more misinformation than existed in countries with limited access to paid publications. What happened to professionals who have a language or time barrier? The speed of publication limits updating and the fact that most publications are in English further restricts access. In this context, COVID-19EC emerged – your information pill, an open access website, in Spanish, with short summaries of articles sifted through three critical analysis filters (<https://uanalisis.uide.edu.ec/>). During the last month, 20934 visits from more than 20 countries were recorded.

Introduction

The pandemic caused by the SARS-CoV-2 microorganism that causes COVID-19 has caused 450,595,971 cases and 6,019,516 deaths worldwide until 9 March 2022 according to the Center for Systems Science and Engineering of John Hopkins University, United States¹. In Ecuador, as of 7 March of the same year, 843,760 cases confirmed by a specific laboratory test (RT-PCR) and 35,316 deaths have been reported². Associated with these significant numbers of cases and mortality, uncertainty also increased in the medical population regarding how best to treat their patients. A quick search in PubMed, the search engine of the MEDLINE database, the largest in terms of medical scientific articles, from 1 January 2020 to 9 March 2022 yields 231,707 results³.

Issues

The Latin American doctor needs to stay updated regarding COVID-19 by reading between 200 and 800 articles daily. Additionally, most of these articles are written in English, which generates a significant barrier in terms of access to up-to-date information by professionals without expertise in scientific and professional English.

An "infodemiological" study conducted in the Italian population with the aim of detecting trends and behaviours in web searches reported that the five most common searches were: "face masks", "disinfectant", "symptoms of the new coronavirus", "health bulletin" and "vaccines for coronavirus"⁴. Similar patterns were detected in different countries of the world as the pandemic spread from China⁵. While it is true, one would expect web pages related to medical content to have quality standards, this is not always the case. Moreover, the medical articles that are published daily are not always of the best quality for several reasons among which can be included: lack of resources to carry out an appropriate methodological design, lack of knowledge, publication bias, absence of multidisciplinary research teams, and many others.

There is no doubt that, the better informed the doctor, the better results will have the patients who are in his/her charge. For this reason, in times of pandemic or not, every health professional should have access to the best information to make the best possible decisions. However, to apply this practice, the doctor must be trained in critical reading, have statistical foundations in health sciences, and most importantly, have the time to analyse in depth each article he reads. For example, a study that analysed 226 health professionals concluded that only 14.2% used evidence-based medicine daily in their professional practice and about 70% of them did not use it at all or did not know what it was⁶.

With the aim of fulfilling all the above objectives, the website and the COVID-19EC group (<https://uanalisis.uide.edu.ec/>) were born, made up of teachers, doctors, alumni and students of the Faculty of Medicine of the International University of Ecuador (FM-UIDE) in order to synthesise each of these articles in brief reviews ("Information pills") so that the health professional acquires all the knowledge of that article in a few minutes.

Applied Methodology

For this tool, a strict methodology was developed for the selection and screening of daily medical evidence. The methodology of the COVID-19EC website is summarised as follows:

1. Search Engines

The search engine to be used for the collection of articles is PubMed (MEDLINE): <https://pubmed.ncbi.nlm.nih.gov/>.

2. Scientific Evidence Search Protocol

A variety of search terms corresponding to COVID-19 and SARS-CoV-2 and their different characterisations are used such as: Epidemiology, Virology, Clinical Presentation, Diagnosis, Treatment, Prognosis and Prevention through the use of a General Search Protocol with the aim of collecting all possible articles daily of COVID19 and SARS-CoV-2. Two search criteria are presented:

2.1.(COVID19 OR SARS-Cov-2 OR Novel Coronavirus OR Wuhan Coronavirus OR Coronavirus Disease 19 OR Severe Acute Respiratory Syndrome Coronavirus 2 OR 2019-nCoV infection OR ("severe acute respiratory syndrome coronavirus 2"

2.2.Search Dates:

Searches for the publication of weekly volumes are performed on a daily basis, all searches are performed exactly at 23:59 which corresponds to 00:59 (Eastern Time: the time zone used by PubMed). Articles are filtered by [Date – Entry] which means the date they entered the MEDLINE database.

3.Selection and Screening of Scientific Evidence (Filters): The selection process of the articles that will be finally included in the weekly volume of the website are subjected to rigorous scientific scrutiny by applying multiple filters of critical reading and analysis to, effectively and reproducibly, select only the best medical evidence. A graphical Abstract of the application of these one-way and sequential filters can be found in Image 1.

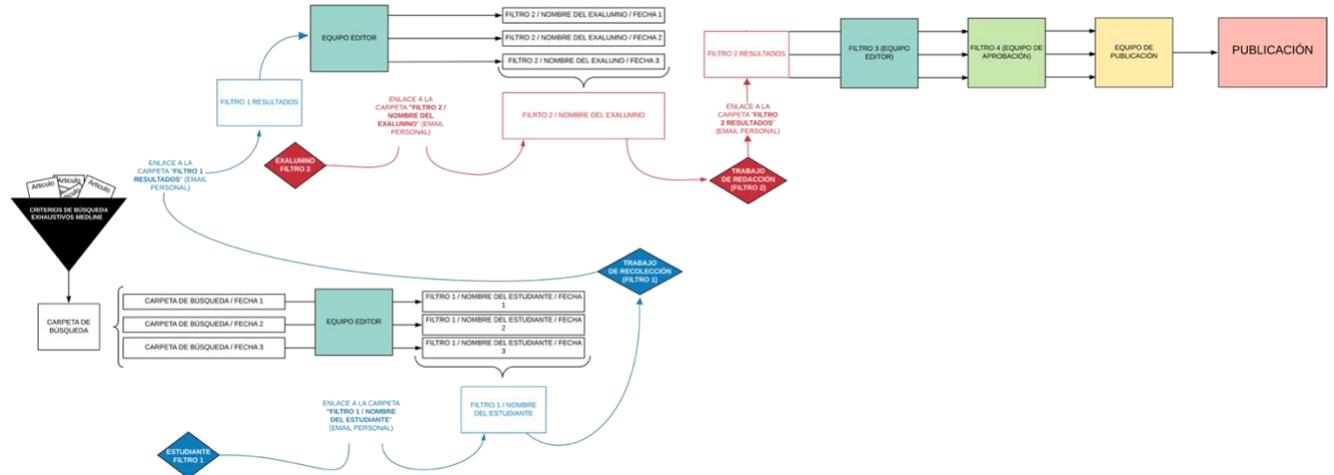


Image 1. Graphical Abstract of applying item selection filters

3.1.Filter 1: This filter consists of students of lower levels of medical school, from the fourth semester of the career. All of them receive training given by the creative group on how to properly identify the

design of the studies and how to make an initial critical reading of them. This filter screens medical evidence using strict inclusion and exclusion criteria.

3.2. Filter 2: This filter consists of students from higher levels of the medical school, rotating interns and graduate doctors of the UIDE. All of them receive training given by the creative group on how to properly identify the design of the studies and how to make a critical reading of them. This filter performs a second screening by using CASP (<https://casp-uk.net/>) checklists that allow critical analysis.

3.3. Filter 3: Also called the Editorial Team, it consists of five health professionals from different fields and walks of experience including: medical specialties, members of national and international medical research laboratories, members of the GRADE group for the qualification of medical evidence and fm-UIDE professors. This filter is responsible for granting an evidence level rating based on the suggestions of the Oxford Centre for Evidence-Based Medicine (cebm.net) and if necessary, grant a Degree of Recommendation, based on the gradation system of the UpToDate page (<https://uptodate.com>).

3.4. Filter 4: The last filter consists of medical specialists who are in the highest positions of their respective field, as well as researchers from various prestigious national and international institutions. The objective of its members is the reading and critical analysis of the reviews approved by Filter 3 together with a methodological analysis of the study and analysis of the applicability with the reality of Ecuador.

Conclusion

The uanalisis.uide.edu.ec website was launched on Monday, 18 May 2020. As of 9 March 2022, it has had approximately 308000 visits. 38 independent volumes have been published. Each one contains the highest quality medical evidence, increasing in Latin American health professionals' access to the best studies summarised in "information pills" that can be read in a few minutes. This has shown that inter-institutional collaboration between students, teachers and professionals is feasible and contributes significantly to those public health problems in which a deep analysis of scientific evidence is required in overwhelming quantities. Undoubtedly, this initiative through an adequate cooperation between Latin America and the Caribbean and the European Union would result in the elaboration of protocols with similar methodology that could be applied in future scenarios like this pandemic and advance to translation into other languages.

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Forename(s), Surname(s) of the Speaker

Rocío Bianchi

Title of the presentation: Open science and its impact on public policy: MASARE Project (Sustainable Management of Aggregates in Rivers and Reservoirs)

Abstract

Citizen participation in open science projects is fundamental in the production of knowledge and in the elaboration and evaluation of public policies. This presentation offers an overview of the open science project MASARE, in which scientific and technological tools required for the definition of public policies in relation to the sustainable management of sediments in water bodies are developed. This management is currently limited by the low spatial and temporal resolution of existing information. They participate on behalf of the community, providing fundamental information, sandpit operators installed in the Cuarto River, convened by academic and scientific institutions and management agencies of the province of Córdoba, Argentina.

Introduction

The growing interest in the formulation of open science projects by citizens and the scientific community has allowed to expand scientific knowledge, uniting the knowledge and experience of citizens and experts, enabling research at scales that would not have been possible otherwise (Newman et al, 2017). Open science improves the quality of science and thus the reliability and proportionality of the evidence needed for sound decision-making and policy. The collaborative and inclusive characteristics of open science allow new social actors to actively participate in scientific production, democratise knowledge, address inequalities of knowledge and power, and orient scientific work towards solving problems of social importance (UNESCO, 2021). For this reason, in recent years the United States, Europe and Australia have supported the efforts of open science and have included it as a public policy (Guerrini et al, 2018).

The amount of information available in water resources and sediment transport is often scarce. Consequently, considering the potential of open science, it opens up a possibility of overcoming this problem with the contribution of information from citizens. Projects were implemented to study the spatial-temporal dynamics of turbidity and suspended sediments in Kenya (Njue et al, 2021), quantify

the concentration of microplastics in rivers in the United States (Barrows et al, 2018), determine spatial trends and causes of the accumulation of marine debris off the coasts of the Bahamas (Ambrose et al, 2019), among others. This presentation offers an overview of the open science project MASARE (Sustainable Management of Aggregates in Rivers and Reservoirs), implemented with the aim of developing scientific and technological tools required for the definition of public policies in relation to the sustainable management of sediments in water bodies and the obtaining of data with high spatial and temporal resolution.

Content

To overcome the low spatial and temporal resolution of hydrological and sedimentological information currently existing in the rivers of Córdoba, MASARE has been incorporated into the community that lives and carries out activities in the bodies of water. In the first instance, the operators of mechanical sandpits installed on the bed of the Cuarto River (Chocancharava) located in the province of Córdoba, Argentina, as shown in Image 1, participate. They were convened by academic and scientific institutions (National University of Córdoba and National University of Río Cuarto) through management agencies, (Provincial Administration of Water Resources of the province of Córdoba).

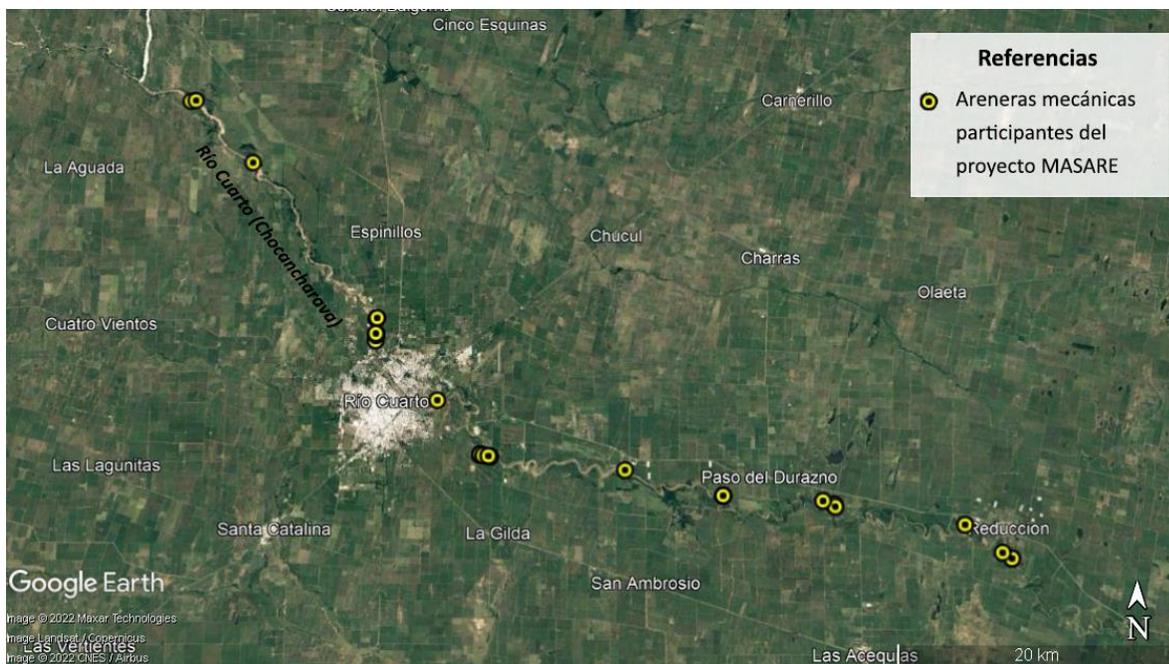


Image 1.- Spatial location of the mechanical sandboxes participating in the MASARE project.

The operators of the sandboxes, with extensive experience in the study system, since some have been active in the same section for more than 30 years, make significant technical and scientific contributions with their observations in relation to the evolution over time of the different processes to be studied (hydrology, hydraulics, sediment transport, etc.). Each month, on a fixed day, they

extract sediment samples from the bed and in suspension and repeat this activity after the passage of important floods. The samples are processed by representatives of academic and research institutions and the results are transferred to the community and management bodies for analysis and to define and evaluate public policies together.

As an example, the results obtained from the mean diameter of the particles of the bed of sediment samples extracted in December 2021 are presented in Image 2. These results show that the parameters do not present a homogeneous behaviour in the river system of the Cuarto River.

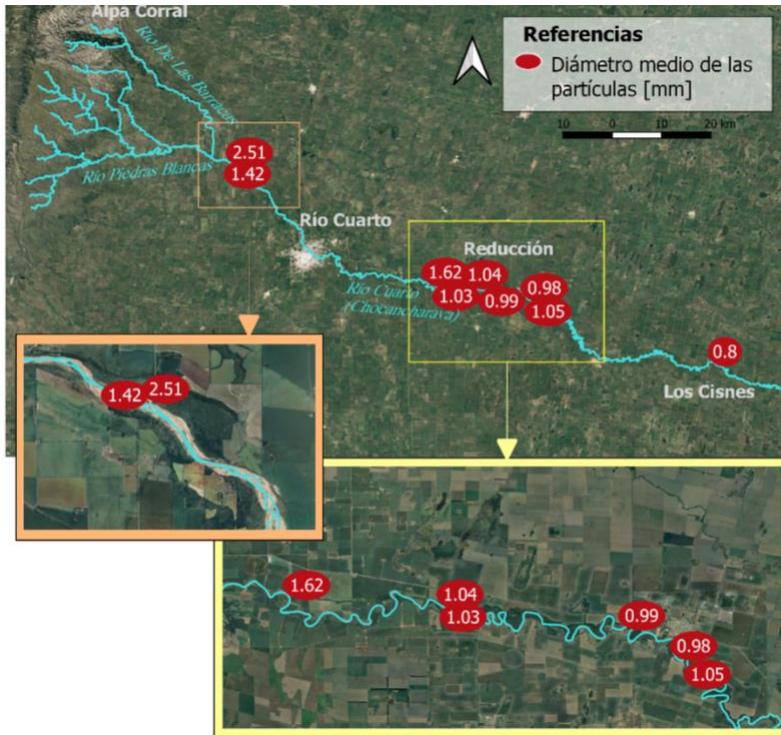


Image 2.- Average diameter of the particles of the bed of samples extracted by mechanical permittees located on the Cuarto River. December 2021.

In a complementary way, the operators report hydrometeorological (rainfall recorded using instruments located in each sandpit), hydrological (response times and flood levels) and hydraulic (flow rates) information to correlate it with the evolution of the characteristics of sediment transport. Then hydrometeorological reports are prepared such as the one shown in Image 3, which presents information on the sheet of precipitation rain surveyed by citizens and official meteorological stations, along with the levels and maximum variation of levels of the main rivers of the basin, provided by visual records of citizens and official limnometric stations during 24/02/2022.

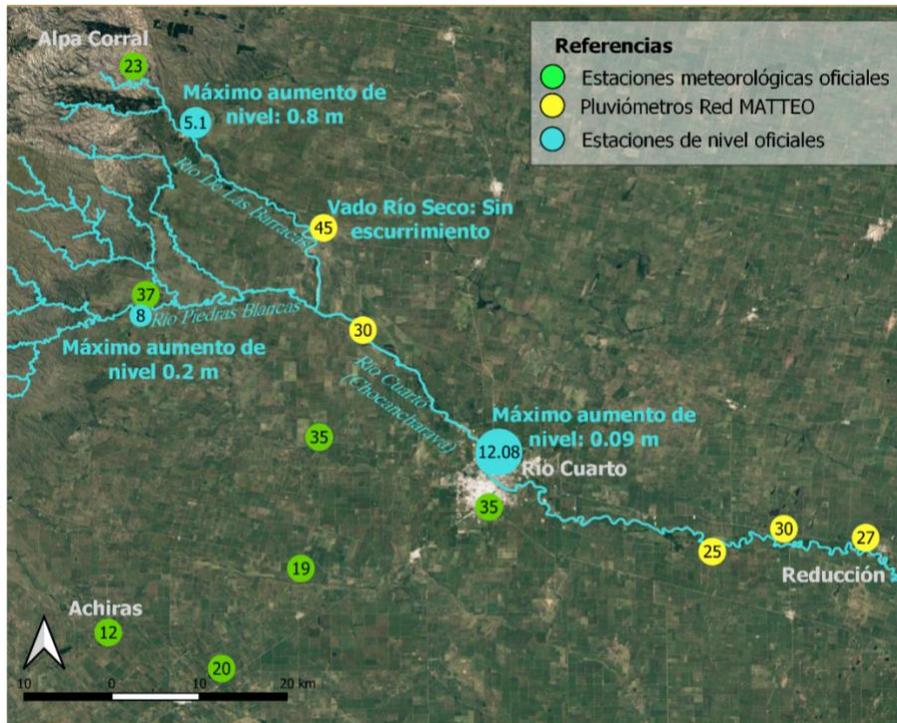


Image 3.- Hydrometeorological report of the day 24/02/2022.

All the reports are disseminated on the project's social networks and are compiled on the website (MASARE, 2022) achieving a good distribution of scientific results in the community, promoting the circulation of knowledge, and expanding the impact of science by multiplying possibilities of local, national and regional participation in the research process. Thanks to this, educational establishments, and groups of volunteer firefighters from the area of the Río Cuarto department are coming together to collaborate in the project. In addition, MASARE is already being implemented in other bodies of water in the province of Córdoba: in the upper basin of the Primero River (Suquía) and the Segundo River (Xanaes).

The results obtained in the 2021-2022 rainy season show a great commitment of the community and valuable data have been obtained that allow progress in the characterisation of the spatial and temporal evolution of the granulometry of the bed and concentrations of dissolved solids in different sectors of the study area, evidencing that there is no homogeneous behaviour in the river system of the Río Cuarto.

Conclusion

Citizen science and open science projects encourage the exchange of knowledge between the community, academic and scientific institutions, and management bodies. Very valuable data are obtained that are being used, in the case of the MASARE project, for the sustainable management of aggregates in water bodies of the province of Córdoba and the elaboration of public policies.

In a first stage, it was possible to characterise flood events in the hydrological year 2021-2022 and to know the spatial and temporal distribution of the sediments transported by the bed bottom together with the concentration of suspended solids during that period on the Cuarto River basin. In addition, hydrometeorological, hydrological and hydraulic information was collected to correlate the evolution of sediment transport characteristics with existing conditions.

A great commitment was shown on the part of the community and a feedback process, where citizen participation was fundamental not only for the implementation of the project, providing fundamental data, but also to define the objectives and problems to be addressed.

The results obtained are transferred to the community and management bodies, achieving a circulation of scientific knowledge and expanding the impact of science by multiplying possibilities for the participation of citizens, educational establishments and organisations. Thanks to this, the project is expanding to other water bodies in Córdoba, and it is expected to work with educational establishments and groups of volunteer firefighters.

The presentation of this work in the Conference of Networks of Young Scientists and the possible interactions with other groups in the region that during its development are initiated, can contribute to two of the seven interconnected lines of action of the EU-LAC Foundation: 1) Higher Education: since the MASARE initiative promotes the participation and contributions of civil society, including the academic sector to cooperation; 2) Science, Technology and Innovation: due to the fact that the linking of agendas and dialogue between governmental, non-governmental and academic interest groups around the implementation of the Common Initiative on Research and Innovation (JIRI) is promoted. These types of initiatives can be replicated throughout the region, although surely local aspects will have to be considered.

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Forename(s), Surname(s) of the Speaker

Jorge Alberto López Guzmán

Title of the presentation: The role of scientific publications in the privatisation and commercialisation of knowledge generated in Universities (Universidad del Cauca)

Abstract

Scientific publications or papers are one of the main instruments for teachers and researchers to demonstrate their productivity in the institutions where they work or research and, in addition, one of the most substantial resources that institutions have for achieving funding and prestige. However, in the culture of "publish or perish", papers become a system of symbols that are institutionalised and socially ordered in that they allow to know and communicate knowledge and creative capacity in a specific way. In other words, the symbolic power they hold means that they not only impose a mastery of language and the construction and transmission of knowledge, but of an imposition in the production of discourses.

Presentation

In most Higher Education Institutions (HEIs) research is the most appropriate mechanism to generate knowledge and productivity, and scientific publications or papers have become one of the most relevant indicators to make that knowledge and productivity visible, allowing the institution to gain renown and legitimacy through State figures or private actors, which allows the positioning at national or international level in rankings or measurements of excellence and educational quality. To this end, many professionals end up being hired, more than for their knowledge, for the possibility of increasing the indicators of publications of their workplace and, those who have been appointed or plant for years and do not do so, are subtly pressured to get involved in this cognitive capitalism¹¹ where hegemonic knowledge and creative capacity¹² become commodities, research into a bureaucratic recipe book and the missionality of institutions in anachronistic documents (López-Guzmán, 2021).

To this extent, the papers become instruments that directly and indirectly establish a set of social and human relations that regulate the production, distribution and consumption of hegemonic knowledge and creative capacity, since part of what makes them seductive for the academic world is not only their content, but their imprint as devices that generate dualisms, tensions, antagonisms and collisions

¹¹ Cognitive capitalism is defined as the development of an economy based on which the production of knowledge becomes the main bet of the valorisation of capital. In this transition, the share of intangible and intellectual capital, defined by the proportion of knowledge workers and high-intensity knowledge activities – computer services, R&D&I, education, training, multimedia, software – is henceforth affirmed as the key variable for the growth and competitiveness of countries (Blondeau, 2004).

¹² It is understood as creative capacity within this work, all the processes of artistic creation that are framed in the notion of research+creation in disciplines such as music, literature, plastic arts, graphic design, visual design, theater, among others, which have also been adapted to the dynamics of production, distribution and consumption (Minciencias, 2021, pp. 11-12).



within worlds or ontologies, where networks of influence are woven, establishing an individual or collective reputation for symbolic solvency and public recognition.

Today, around 2.6 million scientific papers are published in the world every year, 6 large publishers of which 5 are private and for profit such as Reed-Elsevier, Springer, Taylor & Francis, Wiley-Blackwell, American Chemical Society and Sage Publications control 50% of indexed scientific publications worldwide, achieving global profit margins of almost 40% (Larivière, Haustein and Mongeon, 2015; Fold Productions, 2019).

The excessive number of publications at a global level, to a certain extent, has caused a devaluation of knowledge, since the important thing is to publish regardless of the novelty or usefulness, so many journals called "*predators*"¹³ have been used to charge for reviewing and publishing in them without having any criteria of rigor and, sometimes, with content of dubious quality calling into question the role of scientific journals and the relevance of the production of knowledge through these media.

It is important to clarify that in this exhibition of ideas you are not against the papers; the main interest is to reflect and question the role they play in the instrumentalisation and privatisation of knowledge and creativity that is generated in the HEIs, where imaginaries have been founded that stipulate that one of the most valid ways of exposing the ideas or research results should be through a paper, undervaluing other ways of doing research or other types of knowledge that are not found in academia.

Nevertheless, the question of papers has already generated responses and initiatives at a global level. One of them and one of the best known, is the Sci-Hub, a renowned repository and pirate website of more than 84 million scientific *papers* founded by Alexandra Elbakyan. Other examples are the so-called San Francisco Declaration on Research Evaluation, Open Source, the Knowledge Cost Company, or the Leiden Manifesto.

Therefore, the intention of this work in general terms is to invite the reader, the community of teachers and researchers, governments, private entities, universities, think tanks, among other actors, to promote discussion and reflection against the instrumentalisation and privatisation of knowledge and creative capacity, as well as to generate instances of resistance from the academy itself and outside it, in the face of institutional practices that continue to be perpetuated (López Guzmán, 2020).

It is essential to continue joining forces to strengthen the *Open Access* initiative, which is seen as the most viable way to consolidate a system that puts in decline the logic of "publish or perish" and questions the world of papers. Hopefully these initiatives can take place regionally – speaking of Latin America – where many teachers and researchers have built a focus of intellectual resistance and of alternatives to not lose the missionality of the HEIs (mainly public), as a transformative scenario that thanks to many educational policies and CTel has been losing that course.

Open Access does not imply lower quality, since the published papers go through a peer review that imposes quality criteria according to the journals and institutions to which they are part. However, and

¹³ A predatory scientific journal is considered one that in its business model applies the collection of publication fees to authors (APC, for its acronym in English), in addition, does not apply good practices of scientific editing; its evaluation leaves doubts about its rigor by offering very short response and publication times (less than two months) and confuses authors and readers, pointing out that it is indexed in selective international secondary services recognized by national science and technology agencies, without this information being true (Universidad de Santander, 2018).

it is important to mention, among the Open Access publications there are many that charge to publish, establishing a series of conditions of inequality in terms of publication possibilities in relation to journals, institutions and teachers and researchers from developing countries, area of knowledge do not have an economic attractiveness and young researchers who do not have the resources to pay to publish.

Similarly, Open Access journals that do not charge to publish have been criticised by those who profit within the business of publishing, mainly because they work with private money and continue to conceive hegemonic knowledge and creative capacity as a commodity.

In short, the debate of whether to pay to publish can become sterile and partial. Rather, the background with which one can reflect is the support that research should have from its inception to publication and dissemination in the scientific, academic, and social communities. Similarly, the questions that can be addressed about the role of institutions, publishers and public journals to face the instrumentalisation, objectification and privatisation of hegemonic knowledge and creative capacity, it could be said that the lack of resources for research and support in its dissemination and publication in one of the characteristics of why the decline of the publishing world in the public sector, as well as the belief that knowledge is valid according to the place where it is published and the way it is disseminated.

In this perspective, this presentation will feature three moments. In the first instance, it aims to reflect on the way in which papers can be understood within a culture of "publish or perish". In a second moment, it aims to establish how papers become a form of symbolic power over knowledge and creativity. And finally, it hopes to illustrate how Open, Inclusive and Citizen Science is an alternative to resist inside and outside the academy in favour of safeguarding the knowledge and creativity of teachers and researchers.

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Forename(s), Surname(s) of the Speaker

Fabián Santos

Title of the presentation: Prediction of academic performance through urban-rural gradients in Ecuador (Universidad Indoamérica)



Predicción del rendimiento académico mediante gradientes urbanos-rurales en Ecuador

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14.03.2021

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Introducción

- Acceso equitativo a la educación → objetivo de desarrollo del milenio (ODM-4).
- Rendimiento académico condiciona el acceso.
- Determinantes para el rendimiento académico:
 - Condiciones socio-económicas (Abou, 2016);
 - Culturales (Akukwe et al., 2016);
 - Entorno educativo (Kirschner, 2010).
- Poca investigación desde lo territorial.
- Nuevas áreas urbanas y rurales → condiciones de vida y vivienda deplorables (Angotti, 2013)

Q1: ¿Puede el rendimiento académico explicarse (y predecirse) observando un gradiente urbano-rural?

Q2: ¿Qué explicación puede concluirse respecto a la desigualdad de oportunidades educativas?



Créditos: <https://www.globalgoals.org/goals/4-quality-education/>



Datos y métodos (i)

- Base datos "Ser Bachiller" (INEVAL, 2016) (248.252 estudiantes).
- Organizada en tres conjuntos:
 - 1) puntaje global sobre el rendimiento académico (0-10, >7 aprueba cupo educación superior);
 - 2) encuesta sobre factores asociados => 311 preguntas selección múltiple (1171 parámetros);

INSTITUTO NACIONAL DE EVALUACIÓN EDUCATIVA											Resultados Generales				
Código del sustentante	Código de la institución	Régimen de evaluación	Provincia	Cantón	Tipo de financiamiento	Tipo de sostenimiento	Sexo	Año de nacimiento	Área	Etnia	Discapacidad	Índice socioeconómico	Nota examen de grado	Puntaje para postular a la educación superior	Nota examen de grado (ajustado)
0006165931	21H00321	SIERRA	SUCUMBIOS	LAGO AGRIO	PUBLICO	FISCAL	FEMENINO	1999	RURAL	BLANCO/MESTIZO	NO	-0.75153	7.18	640	7.40
000B137269	22H00353	SIERRA	ORELLANA	LORETO	MIXTO	FISCOMISIONAL	MASCULINO	1998	URBANA	BLANCO/MESTIZO	NO	1.18447	7.64	697	7.74
000M189893	17H01128	SIERRA	PICHINCHA	QUITO	PUBLICO	FISCAL	FEMENINO	1999	URBANA	BLANCO/MESTIZO	NO	0.22446	8.99	877	8.79
000P128469	17H01735	SIERRA	PICHINCHA	QUITO	PRIVADO	PARTICULAR	MASCULINO	1999	RURAL	BLANCO/MESTIZO	NO	1.49045	7.81	712	7.28
000SB76674	17H02646	COSTA	PICHINCHA	PUERTO QUITO	PUBLICO	FISCAL	MASCULINO	1999	URBANA	BLANCO/MESTIZO	NO	1.342	6.47	685	6.40
000SB81001	08H00371	COSTA	ESMERALDAS	ESMERALDAS	PUBLICO	FISCAL	MASCULINO	1997	URBANA	AFROECUATORIANO	NO	-0.764	8.47	733	8.55
000SB97769	13H03056	COSTA	MANABI	PICHINCHA	PUBLICO	FISCAL	MASCULINO	1998	RURAL	BLANCO/MESTIZO	NO	-0.522	6.93	667	7.20
0018168081	17H00105	SIERRA	LOJA	LOJA	PUBLICO	FISCAL	MASCULINO	1997	URBANA	BLANCO/MESTIZO	NO	1.00508	7.69	721	7.54
001A145625	17H00755	SIERRA	PICHINCHA	QUITO	PUBLICO	FISCAL	FEMENINO	1998	URBANA	BLANCO/MESTIZO	NO	0.0968	6.79	640	6.88
001G124736	17H00579	SIERRA	PICHINCHA	QUITO	PRIVADO	PARTICULAR	MASCULINO	1999	URBANA	BLANCO/MESTIZO	NO	0.96144	8.04	745	7.59
001S895675	13H02408	COSTA	MANABI	MANTUA	PUBLICO	FISCAL	MASCULINO	1999	URBANA	BLANCO/MESTIZO	NO	0.305	8.96	904	8.85
001V145688	19H00337	SIERRA	ZAMORA CHINCHIPE	EL PANGUI	MIXTO	FISCOMISIONAL	MASCULINO	1999	URBANA	BLANCO/MESTIZO	NO	-0.33036	7.07	685	7.25

Datos y métodos (ii)

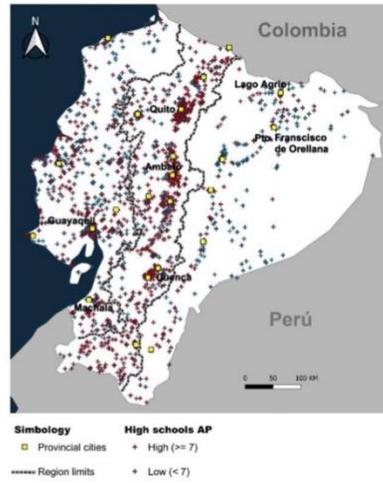
- Base datos "Ser Bachiller" (INEVAL, 2016) (248.252 estudiantes).
- Organizada en tres conjuntos:
 - 1) puntaje global sobre el rendimiento académico (0-10, >7 aprueba cupo educación superior);
 - 2) encuesta sobre factores asociados => 311 preguntas selección múltiple (1171 parámetros);

Código del sustentante	Código de la institución	Régimen de evaluación	Acopabe	Actmabe	Diccionario	Diccionario		
						Etiqueta	Código de respuesta	
0006165931	21H00321	SIERRA	NA	NA	7 acopabe	¿Con qué frecuencia pasaban estas cosas en tus clases? Me sentía a gusto realizando trabajos en grupo	Nunca	1
					7 acopabe	¿Con qué frecuencia pasaban estas cosas en tus clases? Me sentía a gusto realizando trabajos en grupo	Casi nunca	2
					7 acopabe	¿Con qué frecuencia pasaban estas cosas en tus clases? Me sentía a gusto realizando trabajos en grupo	Casi siempre	3
					7 acopabe	¿Con qué frecuencia pasaban estas cosas en tus clases? Me sentía a gusto realizando trabajos en grupo	Siempre	4
000P128469	17H01735	SIERRA	3	2	8 actmabe	Señala la labor que más se parece al trabajo de tu madre	Personal directivo de la administración pública	1
					8 actmabe	Señala la labor que más se parece al trabajo de tu madre	Ocupaciones elementales (limpiadores, trabajo doméstico, peones, ayudantes de preparación de alimentos, vendedores am	10
					8 actmabe	Señala la labor que más se parece al trabajo de tu madre	Fuerzas armadas y policía	11
					8 actmabe	Señala la labor que más se parece al trabajo de tu madre	Desocupados	12
					8 actmabe	Señala la labor que más se parece al trabajo de tu madre	Inactivos (jubilados)	13
					8 actmabe	Señala la labor que más se parece al trabajo de tu madre	Personal directivo de empresa privada	2
					8 actmabe	Señala la labor que más se parece al trabajo de tu madre	Profesionales científicos e intelectuales	3
					8 actmabe	Señala la labor que más se parece al trabajo de tu madre	Técnicos y profesionales de nivel medio	4
					8 actmabe	Señala la labor que más se parece al trabajo de tu madre	Empleados de oficina	5
					8 actmabe	Señala la labor que más se parece al trabajo de tu madre	Trabajador de los servicios y comerciantes	6
					8 actmabe	Señala la labor que más se parece al trabajo de tu madre	Trabajador calificado agropecuario y pesquero	7
					8 actmabe	Señala la labor que más se parece al trabajo de tu madre	Oficiales operarios y artesanos (construcción, metalurgia, electricidad, procesamiento de alimentos, confección)	8
					8 actmabe	Señala la labor que más se parece al trabajo de tu madre	Operadores de instalaciones, máquinas y ensambladores	9



Datos y métodos (ii)

3) georeferenciación de las instituciones educativas (IE) => 3284 IE en total, cada IE con 75 ± 102 estudiantes.



Datos y métodos (ii)

3) georeferenciación de las instituciones educativas (IE) => 3284 IE en total, cada IE con 75 ± 102 estudiantes.

•Bases agregadas a nivel colegio y preguntas organizadas en 3 grupos y 21 temáticas

Variables	Agrupación de factores asociados	prefijo	Fundamentos operativos
Socio-económico y cultural (SC)	Nivel cultural del estudiante	CAC	Describe las condiciones culturales, deportivas y recreativas que realiza.
	Recursos tecnológicos: culturales y de entretenimiento	EDC	Describe el equipamiento tecnológico en el hogar (culturales y de entretenimiento).
	Identidad y lenguaje	CL	Describe la identidad cultural y lingüística.
	Migración	CMG	Señala las condiciones de movilidad humana del estudiante y los miembros de su familia.
	Nivel laboral y socioeducativo de los padres	SEW	Contempla el nivel académico alcanzado por los padres y sus actividades laborales.
	Características, bienes y servicios disponibles en la vivienda	SGS	Considera la disponibilidad de bienes y servicios en el hogar, así como los materiales de construcción utilizados en la vivienda.
Entorno académico (AE)	Ingreso en el hogar	SHI	Referencia beneficios sociales y recepción del Bono de Desarrollo Humano, en la familia, así como la situación laboral del estudiante.
	Estructura del hogar	SHS	Contempla la convivencia familiar según el grado de consanguinidad y afinidad.
	Espacio en el hogar para actividades académicas	ADE	Describe la adecuación de un espacio para actividades académicas, incluido equipamiento tecnológico.
	Clima en el hogar	AHC	Describe la actitud del alumno hacia su hogar y la supervisión de sus padres.
	Seguridad en el aula y en el hogar	ASC	Inseguridad por robo o violencia en el domicilio del alumno o en el instituto.
	Clima en el aula: estudiante vs colegio	ASH	Actitud del alumno hacia la dirección de su instituto.
Cognitivo y vocacional (CS)	Clima en el aula: estudiante vs estudiantes	ASS	Actitud del alumno hacia la convivencia con sus compañeros.
	Clima en el aula: estudiante vs maestros	AST	Actitud del alumno hacia la gestión del aula por parte de su profesor.
	Preparación examen Ser Bachiller	VEP	Contempla el presupuesto y la preparación para la prueba ser bachiller.
	Repetición escolar	VGR	Repetición de curso de primaria o secundaria.
	Habilidades para las ciencias exactas	VHS	Conocimientos de matemáticas, física, química y biología.
	Personalidad y actitud del estudiante	VPL	Actitud del alumno hacia el aprendizaje y sus principales rasgos de personalidad.
Vocación	Disponibilidad y fomento a la lectura	VPR	Actitud del alumno hacia la lectura y su fomento en el hogar.
	Habilidades para las ciencias sociales	VSS	Conocimientos de lengua, literatura, historia, educación para la ciudadanía y filosofía.
	Vocación	VSV	Describe las proyecciones del estudiante en su formación de pregrado y postgrado.

Datos y métodos (ii)

3) georeferenciación de las instituciones educativas (IE) => 3284 IE en total, cada IE con 75 ± 102 estudiantes.

- Bases agregadas a nivel colegio y preguntas organizadas en 3 grupos y 21 temáticas
- Dos clases para el análisis:
 - aprueban examen (>7, ALTA); y
 - No aprueba el examen (<7, BAJA)

• Reporte a nivel de regiones naturales

Region	High AP (≥ 7)		Low AP (< 7)	
	Averag AP Scores (Mean \pm SD ¹)	High Schools (Count)	Averag AP Scores (Mean \pm SD)	High Schools (Count)
Amazon	7.47 \pm 0.39	142	6.64 \pm 0.28	178
Andes	7.75 \pm 0.47	1417	6.85 \pm 0.18	224
Coast	7.66 \pm 0.44	858	6.80 \pm 0.19	465

¹ SD: standard deviation.

Datos y métodos (iii)

• Mapas anuales desde 1985 al 2018 sobre las áreas impermeables artificiales (Gong et al., 2020).

• Reclasificado en 4 clases (gradiente urbano-rural):

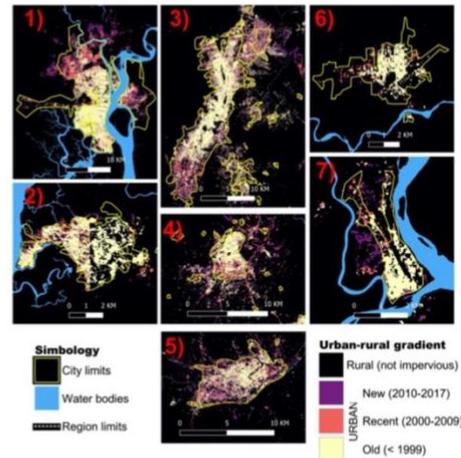
-<1999 => urbano antiguo;

-2000-2009 => urbano reciente;

-2010-2017 => urbano nuevo;

-y rural => siempre impermeable.

Region	Urban-Rural Gradient Map Classes (Count)			
	Rural	New Urban	Recent Urban	Old Urban
Amazon	281	-	2	36
Andes	864	123	128	526
Coast	707	86	171	359



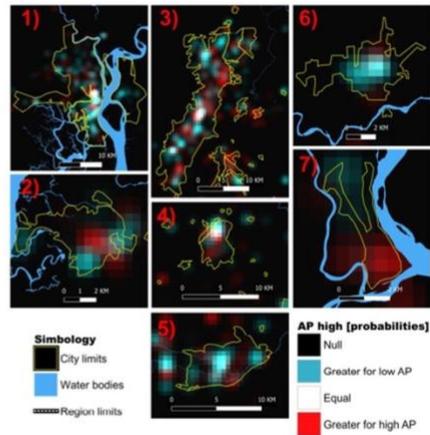
1) Guayaquil; 2) Machala; 3) Quito; 4) Ambato; 5) Cuenca; 6) Lago Agrio; y 7) Pto. Francisco de Orellana

Datos y métodos (iv)

- Muestreo espacial por cada IE:
- 20 estudiantes por clase, i.e. ALTA (>7 pts.) y BAJA (<7 pts.)
- IE con muestra incompleta => asociación de estudiantes por vecindad de su IE.
- Aprendizaje automatizado (Random Forest + Boruta): 3281 modelos de clasificación entrenados (Breier, 2001; Kursá & Rudnicki 2010)
- Con modelos entrenados se extraen:
- Probabilidades predicción para clases ALTA y BAJA;
- Identificación de pregunta + respuesta con mayor poder predictivo; y
- Superficie continua de probabilidades
- Evaluación hipótesis Wilcoxon-Mann-Whitney + tamaño de efecto:

Ha: la probabilidad del alto puntaje en la zona urbana-antigua es mayor que las demás del gradiente urbano-rural

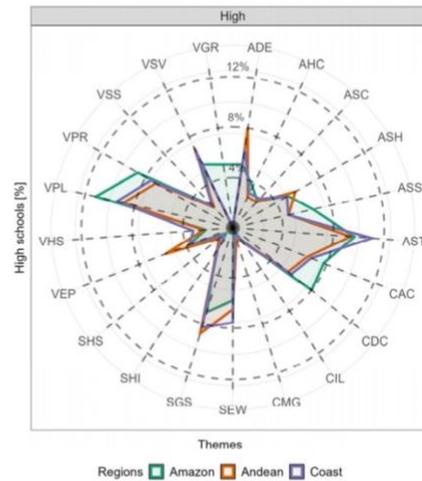
Ho: no existe diferencia significativa



1) Guayaquil; 2) Machala; 3) Quito; 4) Ambato; 5) Cuenca; 6) Lago Agrio; y 7) Pto. Francisco de Orellana

Resultados (i)

- Precisión en la predicción de los modelos:
- general $0,81 \pm 0,1$ (muy bueno) y kappa de $0,62 \pm 0,1$ (bueno)
- resultados no fiables para la amazonía (encuestas incompletas, IE con pocos estudiantes)
- La mejor predicción con grupo de preguntas sobre el entorno socio-económico y cultural
- Temáticas con mayor poder predictivo (en todas las regiones):
- personalidad y actitud de aprendizaje de los estudiantes (VPL);
- clima en el aula: alumnos vs. profesores (AST); y
- actividades culturales (CAC)



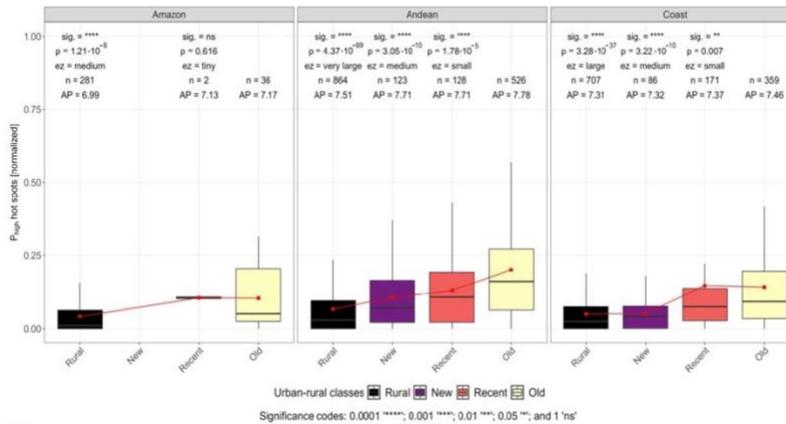
Resultados (ii)

- A nivel de pregunta-respuesta relevantes:
 - accesibilidad a las tecnologías digitales;
 - actitudes positivas entre alumnos y profesores;
 - sensación de seguridad en el IE;
 - nivel educativo de los padres;
 - pago de un curso pre-universitario; y
 - disfrute de servicios básicos.



Resultados (iii)

- Probabilidad ALTO puntaje: urbano-antiguo (<1999) vs otras clases => diferencia significativa ($p < 0.05$)
- Magnitudes de la diferencia: urbano-reciente (2000-2009) pequeña ; otras clases (>2009) mediana y muy larga



Discusión y conclusiones

Q1: ¿Puede el rendimiento académico explicarse (y predecirse) observando un gradiente urbano-rural?

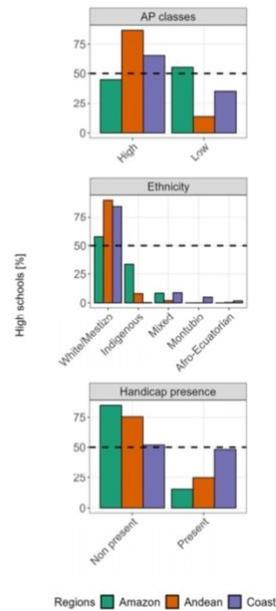
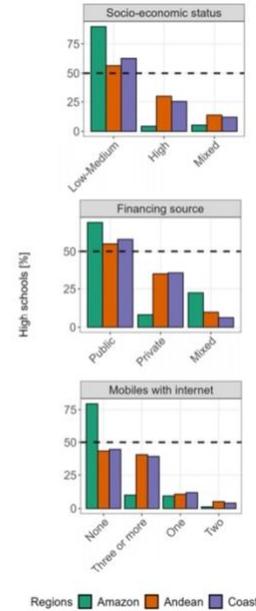
- Sí, depende en todo caso de las condiciones socio-económicas y culturales a lo largo de gradientes urbano-rural, donde el rendimiento decae a medida que se aleja del núcleo urbano
- Las mejores oportunidades educativas pueden explicar parcialmente observando los gradientes urbano-rurales
- Las zonas urbanas-recientes (8 a 17 años de antigüedad) y urbanas-antiguas (>17 años) tienen una mayor ventaja en exámenes como el "Ser Bachiller" y por tanto mayor acceso a la educación superior



Discusión y conclusiones

Q2: ¿Qué explicación puede concluirse respecto a la desigualdad de oportunidades educativas?

- La desigualdad de oportunidades en el sistema educativo es un reflejo del centralismo en el país.
- Este se intensifica con la ya histórica brecha educativa de minorías étnicas, cuyos sistemas educativos no siguen la base hispano-meztizo-occidental dominante.
- Sin esfuerzos que busquen la descentralización de la educación, difícilmente las próximas generaciones gozarán de un acceso equitativo a la educación superior.





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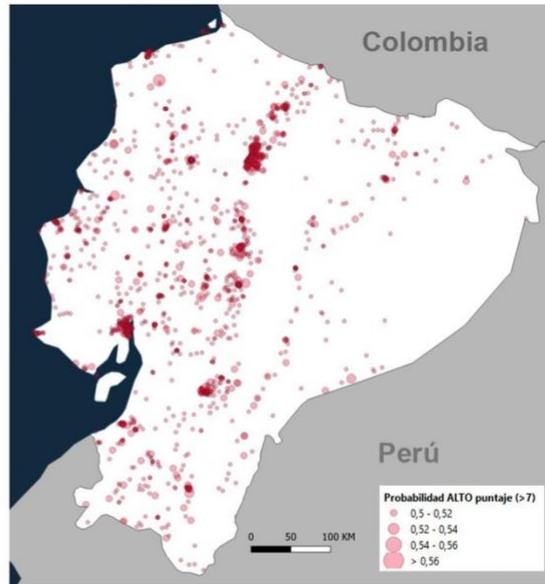
Gracias por su
atención....

Aplicación web:

<https://indoamerica.shinyapps.io/BrechasEducativas/>

Encuesta:

<https://forms.gle/T1QdMacP3bgPnZwJ9>



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Forename(s), Surname(s) of the Speaker

Andrés Valverde Farré

Title of the presentation: The importance of citizen science and open data sources as a model of co-responsibility between academia and citizens



Abstract

Citizen science has evolved from a methodological approach, including citizen science, common science and collaborative science. Collaborative science allows citizens to be understood, not as collaborators at the service of researchers, but as part of a holistic model of co-responsibility between academia, citizens and open data sources. With this approach, the Autonomous University of Barcelona is developing the Citizen Science Hub from a first pilot project within the framework of "The ECIU Citizen Science Community"¹⁴ and the Pilot University of Colombia is working, among others, on the innovative development that contributes to citizen science from air quality in urban context.

Introduction

Citizen science poses global challenges, so it becomes important to be able to align developments, both in Europe and in Latin America and the Caribbean, from the Pilot University of Colombia there is a trajectory that "permanently seeks that its application is oriented to the social construction of territories" (Pilot University of Colombia, 2018). And from the research direction, the Social Appropriation of Knowledge Unit has been created, with one of its specific objectives set in terms of expanding the capacity and appropriation of citizen science and open science.

The Autonomous University of Barcelona participates in the implementation of the Hub in citizen science.

Within the framework of the doctoral work (ICTA-UAB) focused on citizen science for air quality in urban context, Andrés Valverde Farré participates as a member of the creation of the Hub in citizen science, while being at the same time a researcher at the Pilot University of Colombia in an innovation project for quantitative measurements of air quality and participating in the creation of the Social Appropriation of Knowledge Unit.

Content

Within the framework of research focused on citizen science and air quality in urban contexts, there is a trajectory and references that have laid the foundations of several approaches.

There are two opposing currents, on the one hand, (Idrees and Zheng, 2019) advocate disqualifying the use of low-cost sensors to measure air quality, arguing the lack of accuracy of the data that these sensors yield.

On the other hand, (Considine et al., 2020) (Cui et al., 2021) (Feinberg et al., 2019) (Bi et al., 2020) that consider from various methods of correction (calibrated type) of low-cost sensors a complement to official (high-end) fixed stations to improve the spatial details of air quality.

However, in the two most consolidated streams, they bet on continuous measurements focused on identifying in real time values of air quality in the places where low-cost or high-end sensors are placed.

Our research is committed to a measurement model based on micro-measurements and characterisation of the roads, to offer easier to interpret information and therefore a greater influence from and for citizens and in urban design decision makers.

¹⁴ <https://www.eciu.org/for-learners/info/practicalinformation>



Several studies by (Leonardi et al. 2014, Commodore et al., 2017, Jerrett et al., 2017, Wong et al., 2018) emphasise the importance of involving citizens in quantitative measurements of air quality and studies related to the purpose of generating greater citizen awareness in relation to air quality.

Other authors such as (Zappi et al. 2012, Pritchard & Gabrys, 2016, English et al., 2017, Den Broeder et al., 2018, Coelho et al., 2018) delve into greater participation and action by citizens, from changes in habits to generation of citizen empowerment as pressure on public policies.

(Coelho et al., 2018) raise the responsibility of citizens in air quality from their actions.

From a vision of co-creation of citizen science, one of the integrated components proposed by Mahajan et al. (2019) are citizen science workshops for participation and debate that facilitate the monitoring of air pollution through low-cost sensors.

Finally, this research hypothesises that air quality has an environmental justice approach with economic criteria to a greater extent, but also gender-related in the case of Bogotá. And for its development we rely on the background of environmental justice, co-responsibility between actors and open data that have been developed in the two continents of reference.

Conclusion

With the creation of the Citizen Science Hub at the Autonomous University of Barcelona and the creation of the Social Appropriation of Knowledge Unit at the Pilot University of Colombia, we seek an intercontinental dialogue between research projects in citizen science that can align their approaches and transfer their results from contexts, to enrich and consolidate a trajectory of replicable scopes of co-responsibility among the academy, citizens and public entities, work that is being developed by the citizen science project with emphasis on air quality in urban context in Bogotá.

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Forename(s), Surname(s) of the Speaker

Germán Antonio Arboleda Muñoz

Title of the presentation: Citizen participation for technological development and innovation processes

Abstract

Citizen participation in science, technology and innovation (CTel) processes seeks to influence the dynamics of scientific-technological and innovation processes. Increasingly, the importance of linking citizens with CTel processes is emphasised, for the generation of greater relevance of research work, among other advantages. For cooperation between Latin America and the Caribbean and the European Union, the joint strengthening of citizenship in different social, cultural and economic contexts, but with common concerns, can offer the possibility of enriching strategies, where citizens contribute directly to their solution in different territories.

Presentation

Citizen participation in Science, Technology and Innovation (STI) is a process organised for the exchange of opinions, visions and information between different social groups, added to the promotion of dialogues regarding the relevance of scientific knowledge, seeking greater participation of these groups in decision-making (Minciencias, 2022). This represents an added value for research projects, since on the one hand knowledge within citizens is increased and on the other, a greater attraction for scientific work is promoted (Citizen Science Foundation, 2019). This suggests that citizen participation is increasingly taking on a greater connotation for scientific and technological exercise, but also represents new challenges for the articulation of academic and social communities for the resolution of problems through the use of knowledge.

Among the different advantages of citizen participation in STI are the identification of new research topics, the generation of greater public acceptance of research results and the communication of socially relevant research topics (Fundación Ciencia Ciudadana, 2019). Given this, the articulation with civil society can increase the legitimacy of scientific exercises and promote the development of knowledge-based solutions that adapt to relevant and real problems of today's society. In addition, the development of technologies without the participation of communities or the company can generate barriers in the transfer (Ocampo et al., 2019).

In this sense, in the Latin American context, the university can contribute to the dynamisation of this participation from two main aspects: relevant research with the participation of social groups, and dialogues between scientists and citizens on scientific-technological issues to seek to increase the availability, understanding of the STI and promote the incidence on political decisions in CTel (Invernizzi, 2004). In this sense, the University-Society type links seek to configure joint workspaces between the academic field and social organisations (Picabea & Garrido, 2015), from where the exchange of knowledge contributes to generate solutions based on scientific knowledge from academia along with the knowledge of citizens.

This could guide research development towards the search for innovations that also respond to sensitive problems for civil society, where for example Casas-Guerrero (2012), referring to the situation in Mexico, mentioned that: "The eradication of poverty and social inequality must be the highest priority of knowledge and innovation policies. It is not acceptable that our population is still deprived of food, drinking water, housing, and basic health care, when worldwide and in our country, there is the necessary knowledge to address these problems" (p. 13).

This is articulated, for example, with the "transformative approach" of innovation that promotes a transition towards the sustainability of current sociotechnical systems. Where it will be necessary for science and innovation to be oriented towards overcoming great challenges, accompanied by active

participation and dialogue between various actors, disciplines and knowledge, to understand them and advance in their solution (Colciencias, 2018).

But these global challenges cannot be solved without local action. Global problems associated, for example, with the deterioration of the environment, the effects of the current pandemic or the problems of inequality, are sensitive for millions of people in the world. It will require the strengthening of local dynamics but with a consolidation of global knowledge networks, which enable the exchange of experiences towards common challenges.

In this sense, the strengthening of citizen participation in processes of technological development and innovation can influence a strengthening of the articulation of work between Latin America and the Caribbean and the European Union. From the strengthening of a critical mass of people from civil society who can understand and perceive the relevance of technological processes, which facilitates technical cooperation processes for technological development, to the extent that they can participate in solutions to real problems through the dynamics of cooperation.

The development of joint experiences between Latin America and the Caribbean and the European Union, for the promotion of citizen participation in STI, offers the possibility of understanding the dynamics, realities, differences, and challenges of these processes in different places. The enrichment of the exchange of knowledge in this regard can make it possible to identify good practices to encourage this participation. With which it is expected that the dynamics from the CTel process will be increasingly relevant, where common challenges are addressed, but addressed from local particularities.

However, this poses notable challenges to its effectiveness. For example, Sauermann et al (2020) explain how citizens can support complex sustainability transitions in areas such as renewable energy, public health or environmental conservation, but that this will depend, for example, on the increase in diversity, level and intensity of citizen participation. It also represents challenges in terms of science communication, the identification of common languages, the process for joint decision-making and the governance of the CTel. In addition, the promotion of favourable perception towards science is a challenge that remains in the Latin American context.

In conclusion, citizen participation in the STI offers multiple advantages for technological development and innovation. However, there are several challenges facing its effective realisation. There are challenges to increase the legitimacy of STI in civil society, to facilitate the understanding of the relevance of scientific exercise beyond laboratories and articles, to communicate results with greater intensity and to value the knowledge that is generated outside universities and research institutes. In the end, CTel processes are expected to promote greater participation, articulation and relevance to social needs and the solution of global challenges.

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Forename(s), Surname(s) of the Speaker

Abdullah Dayo

Title of the presentation: Overcoming the Barriers of Mobility: Higher Education in the EU-LAC Region

Abstract

The Erasmus programme evolved into the Erasmus+ Programme in 2014 widening its focus from the EU to other regions such as LAC. A key component of higher education cooperation and Erasmus+ is the facilitation of mobility between the two regions for students, professors, and researchers.

This policy brief explores how to further improve mobility in EU-LAC regions within Erasmus+. The goal is to contribute and strengthen EU-LAC bilateral cooperation by providing recommendations for policy makers in both regions on how to further ease mobility for participants in Erasmus+ resulting in a more inclusive and efficient higher education cooperation.

The speaker has not delivered a presentation for the purpose of this publication.

Thematic Session 7: Climate, Environment and Natural Resources

Forename(s), Surname(s) of the Speaker

Jose Fernando Forero Quintero

Title of the presentation: The flexibility of electricity grids as a key element for the energy transition and the fulfillment of goal 7 of the SDGs in the countries of Latin America and the Caribbean

Abstract

Today, multiple efforts are being made to drive an energy transition (ET), from fossil fuels to renewable energy (RE). These efforts have been concentrated on the diversification of energy matrices, installation of distributed sources of RE, taxes on polluting emissions and the development of the electric vehicle. Given the variability of both generation and demand, the development of a future flexible electricity grid is key for the coming years. Therefore, this presentation reviews the concept of flexibility, especially in systems with high RE penetration, as well as its role in the consolidation of ET, the electrification of remote areas and the empowerment of end users.

Introduction

With the increase in renewable energies and the increase in the demand for electrical energy worldwide, the levels of uncertainty about the generation power and the level of consumption has grown, so the power balance is being an increasingly difficult task for system operators, energy companies and regulators. The concept of flexibility in electrical systems has emerged as the most appropriate solution to face unexpected events, errors in the generation forecast, deviations from demand or programme disconnections.

Flexibility is defined as the ability of energy systems to modify their levels of generation and consumption according to sudden events, external requirements or to generate economic benefits to the participants of the system. Grid operators, utilities, marketers, end users and a new entity called "aggregator" are the most interested in obtaining flexibility due to their potential benefits in areas such as network congestion, deferral of investments, frequency and voltage regulation, limitation of peaks and filling of demand valleys, savings in the electricity bill, arbitrage of electricity prices, reduction of polluting emissions and reduction of losses in the networks. Today, flexibility has become the basis of a future smart, sustainable, safe, and modern electricity grid, which can harmoniously couple with the rest of the energy sources to ensure maximum energy efficiency, universal coverage of electricity service for the world's population, the replacement of fossil fuels by renewable energy and the empowerment of end users, that is, the fulfillment of Sustainable Development Goal 7 (SDG7) on affordable and clean energy.

This document is organised as follows. Section 2 mentions the role of flexibility with respect to the SDG7 targets in relation to electricity service coverage (Section 2), sustainability (Section 3), security (Section 4) and innovation (Section 5). Subsequently, the cooperation mechanisms that must be implemented so that the concept of flexibility can be carried out in developing countries are mentioned, based on the experiences and information obtained by developed countries. Finally, some conclusions are presented with the aim of promoting research, development, and cooperation in the area of flexibility of the electricity system.

Affordable Energy

A significant increase in electrification in recent years has allowed 90% of the world's population to have access to electricity in 2019 [1], [2], concentrating the underserved population in sub-Saharan

Africa and rural areas of Latin America and East and Southeast Asia. In addition to the socio-economic factors that prevent its energisation, there are technical challenges that must be solved by the scientific community, utilities, and local and national governments. The main technical solutions of energisation can be classified into expansions of the existing electrical infrastructure or installations of isolated local solutions (microgrids, generator sets, among others).

On the side of network expansion, flexibility, both from the demand and generation side, positively impacts the management of network congestion and the postponement of investments in networks for reasons other than the energisation of non-interconnected areas, this allows network operators to redesign their network expansion and repower plans towards greater investment of energisation projects. On the other hand, the installation of isolated local solutions with flexible features has proven to be more cost-effective in terms of extending the life of storage equipment, reducing replacement costs, lower LCOE and better quality of electrical service [3]. This, coupled with the continued decline in capital costs of distributed power generation and storage equipment, is expected to further drive isolated local solutions and increase the need for demand-side flexibility management.

Safe Energy

Poor connections, fluctuations, unscheduled interruptions, among other quality deficiencies in energy services represent 28% of damage to equipment installed in energisation projects for non-interconnected areas [1]. Likewise, these quality insufficiencies considerably affect the useful life of the equipment, causing increases in the LCOE and reducing the profitability of the projects. Just this previous phenomenon affects to a greater extent institutions essential for human life such as hospitals, schools, government buildings, food and pharmaceutical industry, among others. Additionally, the increased use of fossil fuels for cooking harms the ambient air quality of homes, putting at risk the health of almost 3 billion people in the world.

Undoubtedly, flexible energy systems have higher levels of reliability and resilience compared to traditional systems, because they react faster to unexpected events that affect the quality of supply, in addition to increasing the level of non-controllable loads and distributed renewable generation to increase the capacity of the systems. With networks with greater capacity for power and resilience, the electrification of activities such as transport, cooking and preservation of food, as well as artisanal production processes such as pottery, agriculture, mining, carpentry, ceramics, among others, can be more profitable and safe activities for communities without adequate technical and technological training.

Sustainable energy

In relation to climate change and global greenhouse gas emissions, energy is the sector with the largest contribution, which is quantified at 60% of total emissions. Likewise, the electrification of some industrial processes and sectors such as transport and agriculture, are necessary to achieve the goals of considerable increase of renewable energy within the set of energy sources.

With the development of flexibility, both on the demand and generation sides, the gas emissions of an energy system can be reduced. From the generation side, flexibility has shown that it allows to increase the hours of use of renewable or less polluting generation plants [4], in addition to configuring a coupled operation between storage systems and renewable energy generators [5]. From

the demand side, flexibility is a key element for the incorporation of the electric vehicle in the electricity distribution and transmission networks, given that an intelligent management of the charge and discharge cycles, together with the controllable loads of the installation, allows an efficient and sustainable electricity consumption. Finally, flexibility is incorporated as a fundamental element in power-to-X solutions [6], in which synergies between various energy sectors (gas, hydrogen and heat) are exploited both to seek economic benefits, improvements in energy efficiency, greater productivity and reduction of emissions.

Modern Energy

Energy efficiency is a major challenge for the fulfillment of SDG7 on affordable and clean energy. To meet this target, an annual efficiency improvement rate of at least 3% is necessary until 2030, starting from annual rates below 2.6% recorded until 2019 [1]. In addition, in general, modern systems are not only characterised by being efficient, but also intelligent, transparent, inclusive, integrated, automated and interconnected. In recent years, electrical systems have progressively incorporated communication, monitoring, control and management systems throughout their infrastructure. In Latin America, the percentage of digital electrical substations is below 20% of total yard equipment. Both efficiency, as well as the digitalisation and automation of electricity grids, require an accurate estimation of electricity flows, which tend to be more volatile in electrical systems with high penetration of renewable energy and high demand. Therefore, the development of techniques for managing and controlling the flexibility of the system allows to recover certainty in the electrical parameters and likewise, the investments to implement upgrade plans are lower.

Cooperation between the EU and LAC

As seen throughout this document, flexibility is a crucial issue for the development of future smart, sustainable, affordable and modern electricity grids, and the achievement of SDG7. Scientific efforts for the development of flexibility are concentrated in the European Union and Asia-Pacific, where they face technical, economic and social particularities that prevent their automatic replication in developing countries. Therefore, continuous, and robust cooperation mechanisms are required for scientific institutes of innovation and development to have the theoretical bases and sufficient technical tools to develop their strategies for making the electricity grid more flexible and obtain the maximum benefits that flexibility can provide for society in general.

Conclusion

Due to the implementation of energy transition programmes in the electricity grids, the uncertainty in the balance between generation and demand in energy systems with high penetration of renewable energy and growth in demand is increasing. In response to this challenge, flexibility has emerged as the most efficient solution to face future unforeseen events, new reliability requirements and greater expansion and coverage of the service. Countless research has shown the attractive benefits that flexibility can produce both to the main participants of the electricity system, network operators, end users, regulators and aggregators, and to communities in general. In developing countries, flexibility is a line of research yet to be strengthened and, therefore, robust and permanent cooperation mechanisms, between the EU and LAC, are necessary for the population residing in these countries to

establish smart, safe, affordable and modern electricity networks, in the same way as the goals and objectives contemplated in SDG7.

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Forename(s), Surname(s) of the Speaker

José Gregorio Noroño Sánchez

Title of the presentation: Renewable energies and the transformation of labour dynamics in Latin America (Universidad del Sinú)

The Environment can be defined as the set of physical, cultural, social, economic, etc., circumstances that surround living beings. With this definition we can reflect the meaning that the environment has, since we not only include everything that surrounds us, but also the interrelations between the different factors that are part of it must be included.

During the last decades, the environment has taken a more leading role, becoming part of the social and political debate of a large part of all countries. The interest caused has reached a critical point and continuing to deteriorate the environment poses a great threat to the inhabitants of our planet. The first reports that were made, the first conventions and the international agreements that were reached in environmental matters arose from the second half of the twentieth century, this generated the creation of a social consciousness that extends more and more, and within the organisations.

Today it is urgent to manage the environment, that is why it demands a permanent process, so that it makes possible the design and execution of environmental policies, planning and scheduling of actions

that allow achieving the established objectives or regulating the rules that relate their activities, support the realization of studies or research on the situation in which the environment is, how natural resources should be managed and the alternatives that we can find to promote the improvement of the environment. Actions of conservation, recovery, rational use, control and surveillance must be determined to achieve sustainability in our organisations and processes.

The seven main reasons for climate change and global warming are:

1. Transport emissions.
2. Buildings in need of energy rehabilitation.
3. Industry as a cause of climate change.
4. Excessive generation of waste.
5. Agriculture and livestock: unsustainable food system.
6. Waste of energy.
7. Deforestation.

The effects:

The average temperature of the Earth has increased by about 2 degrees Fahrenheit during the 20th century. What is the problem?

Two degrees may seem like a small thing, but it is an unusual event in the recent history of our planet. Earth's climate record, preserved in tree rings, ice cores and coral reefs, shows that the global average temperature is stable over long periods of time. What should we do? Man can, according to Guerra and Aguilar (2007):

1. Focus on meeting human needs and not just economic ones.
2. Get involved with the business component in energy conservation, water, air, soil purification, and providing employment opportunities.
3. Implement and design new performance standards, which in addition to being permanent, measurable, sustainable, efficient and flexible, also have parameters to measure the effects and consequences on the environment.
4. Recognise that the environment is a limited, sensitive resource that deserves protection and that it is also the responsibility of all humans to conserve it.
5. Promote in the current Governance responsibilities of the care of the environment to both national and foreign companies, demanding measures for the care, maintenance and protection of the ecosystem where the exploitations, companies, industries are located in order to remunerate not only society, but also, the ecosystem, the use and enjoyment of its benefits.
6. Design and implement the Renewable Energy Transformation Index in the Latin American Industry, in order to be able to measure the progress in the adaptation of production systems to the new environmental reality that we need.



7. Establish goals by industrial, business, domestic and university sectors to reduce environmental damage and the transformation of traditional energy consumption spaces into renewable energy.

SLIDES: <https://prezi.com/view/NyE8csUWOcGjtMFiaB8o/>

Forename(s), Surname(s) of the Speaker

María Victoria Longhini

Title of the presentation: Environmental quality and sunlight in urban enclosures and facades. Evaluation of the potential for solar radiation capture in cities

Abstract

The city is an ever-growing system that needs new resources and spaces to develop and expand. These must be thought of correctly, since they can affect the well-being of its inhabitants both from psychophysical health, as well as from human rights and basic services of need. It also initiates a collective change in our community, personal and social commitment, which accompanied by professional advice, helps to create an environmentally sustainable habitat. It is imperative to promote their protection through urban planning that respects minimum standards regarding the use of renewable resources such as sunlight and the increase in the use of this resource in electrical energy promoting the benefits of natural light.

Introduction

The density of the urban area and its geometry in conjunction with the volume of mass built and its distribution in the territory largely determine the availability of solar radiation in an urban sector. The relationships between urban geometry and solar availability in light courtyards of high-rise buildings are directly related to sunny and healthy conditions of their interior spaces.

Faced with the idea that the urban fabric is subject to a continuous process of modifications due to the increase in building density and the height of buildings, an increasing trend, such characteristics influence the use of climate resources so that an adequate urban planning, which respects basic rules, favours their protection (Córica, L.; 2007). We can say then that urban growth generates a greater building density that limits the possibilities of using a renewable resource such as sunlight and the consequent increase in the use of electrical energy conditioning the use and benefits of natural light (Mesa, N.; 2010).

We thus recognise a series of unresolved difficulties in the city, which need the intervention of professionals knowledgeable in the subject to be able to correct these deficiencies, product of a high density together with population growth, and a poor or poorly implemented regulation, which does not allow a planned urban growth, nor ensure conditions of habitability or sunlight to users, where "natural light not only allows conditions of comfort and environmental quality for the user, but also the possibility of providing the amount of light necessary to achieve lighting levels appropriate to visual requirements" (Córica, L.; 2005).

The Covid- 19 Emergency

The evidence that, historically, was reflected in some regulations of minimum exposure to solar radiation of habitable premises, was enhanced in the face of an unpredictable situation at a general level: a sanitary quarantine. However, although it is a situation that we presume to be temporary, one does not cease to wonder to what extent our "habitable" spaces are prepared to provide such a condition to people who for any other circumstance need to stay indoors for extended periods of time. Housing and sunlight have regained their importance and interest in society in 2020 as a result of the COVID-19 pandemic, which meant a paradigm shift with respect to the built habitat and its direct relationship with the psychophysical health of those who inhabit it. Aspects that have to do with the quality and environmental comfort of architectural spaces, the lack of access to direct sunlight from indoor environments and its intrinsic relationship with the mental and physical health of its inhabitants has been put into discussion. Faced with the study of the problems raised and the scope of current legislation, clear problems of accessibility of natural light and sunlight of the building sector are identified, this being one of the most significant aspects to achieve the objective of sustainable urban development, where the choice of the appropriate design plays a fundamental role.

The city

The excessive and inevitable growth of cities stems from high-rise construction in most central urban areas. High-rise buildings: possibilities for high-density housing, limitations of access to natural light on lower floors and problems related to the exploitation of solar radiation for renewable energies (Longhini, Ajmat, Sandoval; 2015b).

The city of San Miguel de Tucumán (SMT), currently presents an urban morphological development that is not governed by environmental design guidelines or comfort; but rather related to land uses and surfaces - maximum and minimum heights directly related to real estate interests, so the integrated analysis of formal alternatives of the envelopes of the buildings and their interaction with the environment, considering orientation, climate, sunlight, irradiation, allows to establish a pattern of urban development and compare the results with respect to the current guidelines of the Urban Planning Code of SMT (CPU SMT) (Longhini, et al; 2016a). That is why knowing how and to what extent the density of the urbanisation of the SMT city affects or decreases the possibilities of solar capture, will allow better planning, as well as the updating and generation of adequate regulations for the best use of natural light (Longhini, et al; 2016b)

Contributing to the study of the theme of natural light and the use of solar resources is of the utmost importance "involving the development, validation or adjustment of sustainable Urban Indicators of application to the local context, correlating the behaviour of natural light and access to the sun through simulations that take into account the temporality and intensity of solar radiation and the spatiality of morphology in current scenarios and with specific problems in the city" (Córica, 2019).

Taking advantage of the solar resource and proposing a predictive methodology that systematises the simulation processes is the contribution of this work as a resource for the planning of future modifications to the building codes of the cities and, consequently, improve the conditions of habitability, sanitation and sunlight.

Conclusion

Digital simulation is of great help in the different instances of architectural design, as a tool for the formalisation of ideas, complemented by another very powerful: geometry. From this emerges a critical look at legal, architectural, functional, and environmental aspects that lack solutions or that do not have a sufficient study in the development of their design to meet the demands, both, of the urban environment – habitat. In this sense, this line of research has meant a contribution to the study of urban-architectural design alternatives in the previous stages in order to enhance the use of natural resources for the production of clean energy to improve the conditions of habitability of interior spaces, conditioning, shelter, among others. The proposed theme addresses a current and interesting topic in terms of densification in height of the city, a problem to be considered by both the academic-scientific and professional-real estate fields. The proposed research seeks to respond based on a detailed elaboration and specific methodologies for predicting the behaviour of urban designs in relation to the climate in the region and can be applied to various cities. The proposal falls within the SDGs of the 2030 Agenda: "No. 7. Ensure access to affordable, reliable, sustainable and modern energy for all" and "No. 13. Take urgent action to combat climate change and its effects." (United Nations, 2018). As a contribution, developing new knowledge and transferring it to a public agenda that manages the articulation between the intervening agents, is the spirit of this proposal.

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Forename(s), Surname(s) of the Speaker

Soffa Nobili

Title of the presentation: Bioremediation of soil contaminated with hydrocarbons using local organic materials and earthworms (Instituto de Desarrollo Tecnológico para la Industria Química – CONICET – UNL)

Abstract

The bioremediation efficiency of a soil contaminated with diesel was evaluated using organic materials and earthworms to recover its biological quality. In the first stage, 90 kg of substrate were composted using contaminated soil, vermicompost, rice husk and wheat stubble. Then, during vermiremediation, the performance of *Eisenia fetida* and *Amyntas morrissi* in diesel degradation was evaluated. The initial concentration of hydrocarbons decreased 10.97% after composting, and between 45.2 and 60.81% after vermiremediation. In addition, substrates treated with earthworms did not indicate phytotoxicity and reflected high maturity values. Vermiremediation was efficient in modifying and recovering soil quality in a short period of time.

Presentation

Activities related to the extraction of petroleum hydrocarbons and the production of derivatives such as diesel and naphtha, among others, trigger numerous socio-environmental problems worldwide (Ossai *et al.*, 2020). In Argentina, the areas most referenced for oil pollution in the soil are Patagonia, Cuyo and Buenos Aires, largely due to operations related to the oil and gas industry (Commendatore & Esteves, 2007; Laos *et al.*, 2012; Molina *et al.*, 2019). In the case of the province of Santa Fe, although it does not present productive activities of exploitation of hydrocarbon deposits, it is not exempt from pollution impacts due to spills during the storage, transport or unloading of these compounds, both in agricultural areas and in urban areas and industrial parks (Aire Digital, 2018; Sin Mordaza, 2019; Reconquista Hoy, 2021). The search for an environmentally sustainable approach has led to a constant evolution of remediation and restoration technologies, among which biological treatment methods, also known together as 'bioremediation', stand out. Some methods that stand out for showing high applicability and low costs in numerous antecedents are composting and vermiremediation (Shi *et al.*, 2020; Tran *et al.*, 2021). First, composting consists of the microbial, aerobic and controlled biochemical degradation of residual organic materials and their conversion into a stabilised organic material that can be used as a conditioning substrate for the remediation of soil contaminated with organic compounds (Ren *et al.*, 2018). Second, vermiremediation is a technology based on the use of the worm life cycle and its interaction with other abiotic and biotic factors to accumulate and extract, transform or degrade pollutants in the soil environment (Shi *et al.*, 2020). These techniques have demonstrated high effectiveness in the removal of petroleum hydrocarbons in the soil, and their joint use exhibits even higher degradation rates than those detected for each one separately (Ceccanti *et al.*, 2006; Hickman & Reid, 2008). Currently, the reported studies of vermiremediation in Argentina are incipient



and scarce, and there are no records regarding their application in soils contaminated with hydrocarbons.

The objective of this work was to evaluate the efficiency of the bioremediation process of a soil contaminated with diesel using local organic materials and earthworms in order to recover the biological quality of the contaminated soil.

The experimental design took place at the Instituto de Desarrollo Tecnológico para la Industria Química (INTEC, CONICET-UNL) in the city of Santa Fe, Argentina, between March 2020 and April 2021. During Stage I of composting, a substrate was prepared using soil, vermicompost and agricultural organic waste (rice husk and wheat stubble), of which 90 kg were artificially contaminated with 720 g of diesel, from an engine in the machinery sector of the Pilot Plant (8 g of diesel/kg of substrate), while 10 kg were reserved as a control sample (without contamination). At the beginning and end, that is, on days 0 and 75 respectively, physical, chemical and biological determinations were made in order to characterise the control and contaminated substrates such as pH, electrical conductivity (EC), organic matter (MO), ammonium (N-NH_4^+), organic nitrogen (NO), hydrolysis of fluorescein diacetate (FDA) and Total Petroleum Hydrocarbons (HTP). The cations present (Na^+ , Ca^{2+} , K^+ , Mg^{2+}) were also quantified. At the end of Stage I, an escape test was performed for the species of earthworms *Eisenia fetida* and *Amyntas morrisi*, to determine the suitability of the contaminated substrate. On the other hand, during Stage II, this was arranged in 4 treatments with 3 replicas each, in order to evaluate the performance of each species separately and in combination (T₁ and T₂ and T₃, respectively) to compare with a treatment without the addition of worms (control, T₀). During days 15, 30 and 45, the following determinations were made in each treatment: pH, CE, MO, NO, FDA and HTP. On the final day (day 60), the concentration of N-NH_4^+ and cations were also determined. Biological parameters of the earthworms such as survival, biomass, reproduction and behaviour were also evaluated. Subsequently, a phytotoxicity analysis was performed using germination bioassays of *Lactuca sativa* seeds in order to determine the germination index (GI) of each sample.

The results of the flight test showed that at day 75, the composted contaminated substrate was suitable for the survival of the two species of earthworms with low values of percentage of evasion (< 20%), according to the values recorded by Hund-Rinke *et al.* (2003).

The final physico-chemical results showed that the concentration of HTP during Stage I decreased 10.97%, while in Stage II it was significantly reduced in all treatments, with removal efficiency values according to the following order from highest to lowest: ↓ 60.81% in T₁, ↓ 46.74% in T₂, ↓ 45.2% in T₃ and ↓ 16,05 % in T₀. The treatments with worms indicated statistically significant differences in the degradation of the contaminant with respect to the control (without worms) and it was evidenced that the worms, together with the microbiota of the substrate, accelerate the remediation process. In terms of survival, *E. fetida* was more resistant than *A. morrisi*, although morphological and behavioural alterations were observed in individuals of both species as sublethal effects on diesel exposure. On the other hand, only oothecas and juveniles of *E. fetida* were found, although it should be noted that the oothecas, at the end of Stage II, did not hatch. Regarding phytotoxicity tests, worm treatments did not indicate toxicity (>60%) and were even above the value for which a substrate is considered mature (80%) according to Zuconni *et al.* (1985).

Considering that the substrates of the T₁, T₂ and T₃ treatments, obtained from Stage II, presented relevant HTP removal values and did not present phytotoxicity, the application of vermirremediation



turned out to be an efficient technology in the modification and recovery of the quality of the substrate with respect to the initial (contaminated) state in a short period of time. This is also evident with the physical, chemical and biological parameters obtained at the end of the experience. On the other hand, due to the scarcity of available information on the environmental effects of soil pollution by diesel in earthworms, new experimental contributions were generated in vermirremediation of substrates contaminated with diesel and its ecotoxicological effects on species specific to the place, in this case for *A. morrisi*. The need to add organic material for the subsistence and efficiency of earthworms used in soils contaminated with hydrocarbons to help decontamination and improve the quality of substrates for future productive applications for ornamental or forestry purposes was also clearly evidenced.

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Relevance of the work for cooperation between regions

The free exchange of information between Latin America, the Caribbean and the European Union strengthens the ties of cooperation between regions since the scientific bases for sustainable and equitable human development are laid. As mentioned above, soil pollution by petroleum hydrocarbons affects several countries around the world. In recent decades, research on remedying its effects has focused mainly on the generation of highly applicable and low-cost technologies for a wide range of scenarios. In this sense, the results obtained in the framework of this work on the vermirremediation process are revealing and increase the available information on its effectiveness and use. In addition, the final substrates demonstrated a higher biological quality, with the possibility of being used as organic amendments for productive purposes, a fundamental aspect at present to reduce the use of chemical fertilisers and the recovery of soil fertility. The solutions generated in the field of bioremediation are relevant both for developing communities and for highly industrialised areas, even more so in view of the challenges concerning global climate change, population growth and the generation of agricultural and industrial waste.

Forename(s), Surname(s) of the Speaker

Jorge David Bravo Villegas

Title of the presentation: Development of a methodology to locate the intertropical convergence zone (ITCZ) by post-processing wind data obtained from the era interim data file (National Polytechnic School)

Intertropical Convergence Zone (ITCZ) Location using wind data from ERA Interim.

Abstract

The Intertropical Convergence Zone (ITCZ) represents one of the most important climatological variables for the planning and development of marine operations, and the physical nature of this zone is directly related to the convergence of trade winds. In this project a new methodology to locate the ITCZ is proposed, using numerical and statistical analysis of the wind flow in the eastern Pacific Ocean region, obtaining as results the distribution of locations for forty-one years of data available from ECMWF. This allowed the identification of seasonality, months with a short range of prediction, ITCZ displacement trends, and anomaly behaviour patterns in years that ENSO was active in the region.

Presentation

Many characteristics of tropical weather are expressions of dynamic and thermodynamic convergence of the north and south hemispheres. This includes equatorial upwelling (a process where deep cold water, rich in nutrients, emerges to the surface), deep tropospheric convection (thermal phenomena that allow movement and mixture of air packages at different heights of the atmosphere), a complex

structure of oceanic currents and one of the most stable systems of wind currents in the planet, which are trade winds [1]. Among all the phenomena that characterise the tropical region, the one that represents the interaction of the two hemispheres in the best way is the Intertropical Convergence Zone (ITCZ), whose analysis is fundamental to understand the interaction between surface temperature in the ocean, superficial winds, wind convergence, and sea-level pressure. Its main characteristic is a high content of steam in the air, which cools down in high altitudes and leads to intense rainfall, liberating accumulated humidity [2].

Finding the location of the ITCZ and its migratory properties using wind data has been a challenge in the past for several reasons. First, direct observations of the boundary layer in tropical winds have been sparse. Additionally, short-range weather predictions, which usually provide data for the analysis in numerical weather prediction have been traditionally less effective in the tropics than in medium altitudes, due to complexity in the tropical circulation. Finally, the balance restrictions applied in data assimilation presented little wind information from the total field of data in the tropics [3]. Data from vessels, superficial sensors, and altitude sensors have been used to study the dynamics and climatology of superficial flow in the equatorial region, subsequently, data reanalysis were developed and in recent years there has been an improvement in continuous observations of wind vectors in ocean surface thanks to space-based dispersómetros, particularly the scatterometer [4]. Analysis and forecasts in the tropics have improved significantly, thanks to the development of more complex methodologies that implement variational models for data assimilation, like assemble Kalman Filters, 3D-Var, and 4D-Var. This achieves an improvement in the initial conditions forecast and its adjustment in time [5][6][7]. The problem is the lack of information about ITCZ's location; therefore, a strong methodology is required to use meteorological and physical data available and characterise the location and migratory behaviour of it, reducing precision errors and easing its visualization.

Main section

This project proposes the development of a new, heuristic methodology that combines data science procedures like collecting, cleaning, and analysing data with the creation of algorithms for processing and visualization of results [8], to find the location of the ITCZ using the wind velocity vectors field from ERA-Interim, acquired from the ECMWF. Due to the high computational capacity required for a global analysis, the study region has been reduced to the equatorial Pacific Ocean (Longitudes 180°-285°). Different meteorological, environmental, and energetic projects have used data science in combination with numerical models and satellite data to achieve statistical results [9][10]. In this project, MATLAB is used as the computational software and different independent algorithms were developed to iterate between data cleaning and analysis steps. The proposed methodology consists of:

- Selecting the right convergence criteria to transform the velocity vectors field to a scheme of the zones of global convergence.
- Organizing, clustering, and filtering the resulting convergence points to get a simplified scheme of global convergence zones.
- Debugging the convergence points and developing new algorithms to connect the first convergence lines.
- Analysing the trends and limits of the lines to characterise them.



- Cleaning the noise lines and establishing a final connection algorithm to get the final convergence lines that represent the ITCZ.

Finally, perform a statistical analysis of the results to identify trends, patterns, and behaviour of the ITCZ in 41 years of compiled data from the ERA-Interim database.

All the algorithms used in the development of this project can be found at: <https://github.com/JBravo94EC/ITCZPacific>. Additionally, the results record can be found at: <https://doi.org/10.6084/m9.figshare.19102898.v1>

Conclusion

The development of an algorithm for processing, filtering, and visualizing wind data to get the ITCZ location is possible from different approaches, in this project the use of a simplified heuristic methodology allowed to reduce the computational time and memory required for the algorithms. Also, the use of integrated tools from MATLAB made it very fast to visualize the results and iterate between values when necessary to select the ideal ones. Trial and error might not have been the more accurate approach to the problem, but thanks to the amount of data available it was a useful tool to identify geographical and physical characteristics to find the location of the ITCZ, allowing to solve problems like bifurcation in convergence zones and double ITCZ.

Once the eastern Pacific Ocean region was selected as the trial zone for the methodology a massive amount of data was processed and the results were ITCZ location diagrams with a statistical distribution of median values, which made it possible to find the variability in the location monthly, yearly, and seasonally. This made it clear that the range for the location of the ITCZ is majorly between 20°N and 15°S, showing a displacement to the north and a reduction in the interquartile range gradually since April. Additionally, the meridional displacement of the ITCZ follows a downwards trend until March, when it reaches its minimum latitude, then going upwards until it reaches its maximum value between August and September. Taking this into account it is possible to agree with Schneider [11] y Philander [12] in the equatorial trend of the location of the ITCZ the vast majority of the year. By analysing all the results, it is possible to find atypical behaviours in the interquartile range of the months when ENSO was active in the region, showing a downward trend towards the middle of the ENSO period and an increase in the dispersion of the amplitude of the distribution as a consequence of this phenomena. Also, it was possible to notice a clear reduction in the dispersion of data in the twentieth century which agrees with Byrne [13] about the reduction in the amplitude of the ITCZ.

It is important to contextualize that the results from this methodology are meant to be part of a series of weather forecasting tools, developed to integrate a support system for decision making respect to the planning and development of marine operations in the country. For this reason, these results cannot be taken as a final step but instead as a starting point to keep developing a complete model that allows using the ITCZ as a predictive characteristic of weather and atmospheric and oceanic phenomena. During the development of this study, new research about the location of the ITCZ in different regions was found, which uses similar atmospheric data combined with statistical processing like Žagar [4], Colna [14], and Lashkari [15] projects.

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This project could be considered as a starting point within a framework of international cooperation for planning and execution of strategies to mitigate the effect of climate change in the region, build a better infrastructure for the prevention of natural disasters and understand climatological behaviour around marine operations. This methodology works as a tool for the analysis of the correlation between natural phenomena like ENSO and meteorological variables like the ITCZ location but also integrates a computational infrastructure of data and algorithms that can provide technical data for industry and academia in the Latin American region and the Caribbean.

Forename(s), Surname(s) of the Speaker

Pablo de la Veja



Title of the presentation: The causal effect of external debt on greenhouse gas emissions

Abstract

We estimate the causal effect of external debt (ED) on greenhouse gas (GHG) emissions in a panel of 78 emerging market and developing economies (EMDEs) over the 1990-2015 period. Unlike previous literature, we use external instruments to address potential endogeneity problems. We find a positive and statistically significant effect of ED on GHG emissions. A 1 percentage point (pp.) rise in ED causes, on average, a 0.5% increase in average GHG emissions. Moreover, when disaggregating ED between public and private, we find that only the former has a positive and statistically significant effect on GHG emissions. Finally, when considering the type of creditor, the external public debt from bilateral (private) creditors causes, on average, a 1.2% (0.9%) increase in average GHG emissions.

Presentation

Human-induced climate change due to environmental degradation is probably the most serious problem facing humankind. The concentration of greenhouse gases (GHG)—particularly, carbon dioxide (CO_2)—in the atmosphere has risen at a tremendous pace in recent decades (IPCC, 2016). Because of their threat to climate stability, biodiversity, and economic development, there has been a great deal of academic and political interest in the determinants of GHG emissions.

The empirical study of greenhouse gas (GHG) emissions determinants has been traditionally framed into the Environmental Kuznets Curve (EKC) hypothesis since the early nineties. In short, the EKC hypothesis states that environmental degradation is an increasing function of economic development until a critical income level when higher economic incomes are negatively associated with environmental damage, following an inverted U-shape pattern.

Although the EKC literature is wide and long dating, the study of the relationship between external debt (ED) on GHG emissions has recently started to receive some attention. The motivation behind these recent works is the question of whether ED has been financing GHG emissions in countries like China, India, and other emerging market and developing economies (EMDEs). This hypothesis is crucial since, over the last decades, there has been a generalized build-up of debt in almost every country in the world, and the public sector has led this process (Antoniades and Griffith-Jones, 2018; Moreno Badia et al., 2020; Kose et al., 2020).

In EMDEs debt issuance is fraught with idiosyncrasies and vulnerabilities that may give a lead to various potential issues. Governments tend to borrow in international markets because of two characteristics of their economies. Firstly, due to the relatively small size of their domestic financial markets, domestic borrowing could demand institutional investors and banks to absorb excessive debt—crowding-out private credit and negatively affecting financial stability— (Panizza, 2008). Secondly, EMDEs' governments usually become financial intermediaries—*market makers*—of domestic private agents that do not have access to the world capital market (either guaranteeing private external debt or taking debt abroad and then granting loans to the private sector) (Azzimonti et al., 2012).

We could only find four papers that address the relationship between GHG emissions and ED, of which three deal with a single country (Katircioglu and Celebi, 2018; Beşe et al., 2021a; Beşe et al., 2021b). On the contrary, our work is more aligned with Akam et al. (2021), who use a panel of thirty-three heavily indebted poor countries. However, we expand the scope of the analysis by using a wide and

heterogeneous panel of seventy-eight EMDEs. In addition, unlike the previous literature, we use external instruments to deal with potential endogeneities in the relationship between ED and GHG emissions. In particular, we exploit the exposure to global push factors of international monetary liquidity (Reinhart and Reinhart, 2009; Forbes and Warnock, 2012; Rey, 2015) as an exogenous variation in ED.

When taking into account the potential endogeneity problem, we find a positive and statistically significant effect of ED on GHG emissions. A 1 percentage point (pp.) rise in ED causes, on average, a 0.5% increase in average GHG emissions. Moreover, when disaggregating ED between public and private, we find that only the former has a positive and statistically significant on GHG emissions. Finally, when considering the type of creditor, the external public debt from bilateral (private) creditors causes, on average, a 1.2% (0.9%) increase in average GHG emissions. On the contrary, we do not find any significant effect of external public debt from multilateral creditors on environmental damage.

In Abstract, our results point to significant environmental effects of external financing. Therefore, both governments and private agents should take this into account and consider a more environmentally friendly destination for funds raised in international markets. This knowledge is crucial to design policies towards sustainable development.

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Forename(s), Surname(s) of the Speaker

José Rolando Dupuy Parra; Mairelis Videaux Aguilar; René Lesme Jaén

Title of the Presentation: Use of biomass as a renewable source of energy

Abstract

The wood processing industries have the characteristic of generating large amounts of waste in the process of exploitation and elaboration of the same. The optimal use of this renewable energy source requires the development of a series of studies aimed at assessing the volume of available waste generated by the entity, potential and annual energy production. Our country, Cuba, is directing a programme for the generation of electricity with this wood biomass.

Introduction

Biomass as a renewable source of energy has been presented as a promising source of alternative energy for the replacement of fossil fuels, not only because of its global potential, but because it is a neutral source of CO₂ and its thermoconversion generates low emissions of SO₂ and NO_x [2].

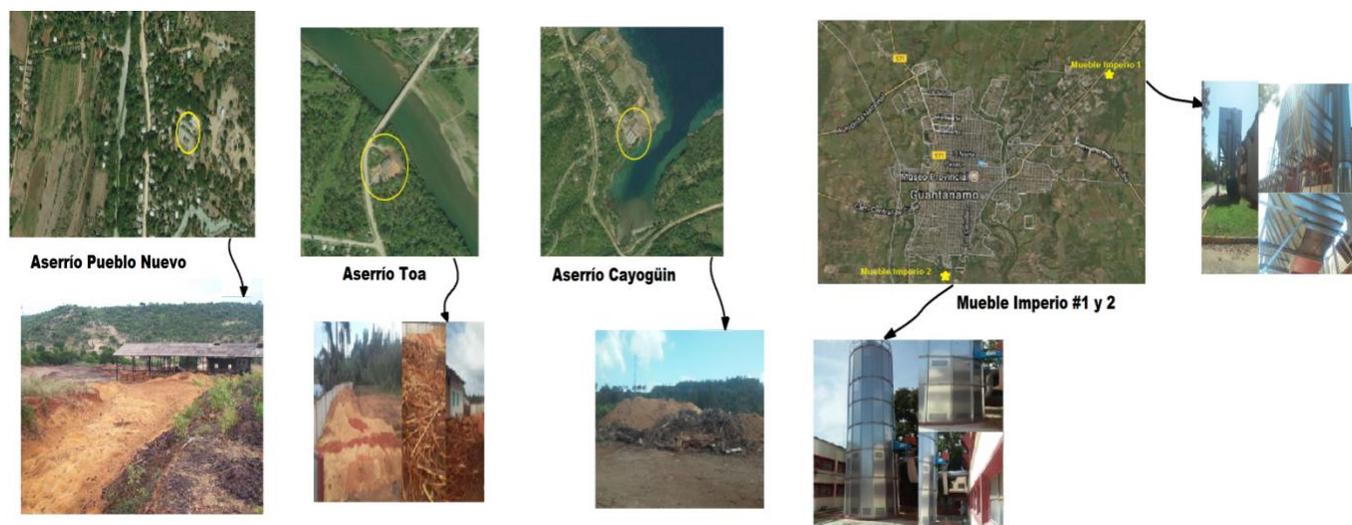
The sources and types of biomasses are different in each country; however, special attention deserves industrial waste, which is generated during production processes. This waste can be used as energy sources in thermochemical processes that convert the chemical energy of biomass into thermal energy: Combustion, gasification, and pyrolysis.

In Cuba, large amounts of waste are generated in the wood processing industry, this waste accumulates in areas surrounding the industry, does not have a useful destination and constitutes a source of environmental pollution [3].

Content

Biomass understood as organic matter generated by biological processes and within the reach of man, has been used for energy purposes since the discovery of fire. It provided and allowed light for the nightlife, heat to protect from the low temperatures, perform the cooking of food, defense against the attack of beasts and rivals. Once our ancestor gained mastery of fire, he began his unbridled race towards humanisation, both by perfecting life in the communities, strengthened under the protection of the home and enriched by social integration, and by the influence of a diet for the development and quality of his body. Therefore, it is evident the importance that has had and has for man that primary energy resource that is forest biomass [4].

Cuba has a programme for the use of forest biomass for the generation of electricity with gasification technology, in which it stands out. The Installation in La Melvis 1 MW, crocodile community 50kW, Experimental Station of Pastures and Forages of Indio Hatuey 22kW, Integral Forestry Company Gran Piedra Baconao 40kW and UEB Enrique Troncoso of the Agroindustrial Grain Company 100kW [1]. As part of this programme, other possibilities for the generation of electricity from industrial waste are evaluated, among them the wood processing industries of the province of Guantánamo that do not have this type of technology.



Photos: Main Wood Processing Industries of Guantánamo

Table 1: Indicators of sawn timber production in the sawmills of the province of Guantánamo

Indicators	U/M	Sawmills				Total
		Pueblo Nuevo	Toa	Cayogüin	Empire Furniture	
Wood in Bolo	m ³	134162.8	12987	22115		169264.8
Lumber	m ³	15080.6	6849	11663	31412.65	65005.25
Wood for Charcoal	m ³	23117.2	2029	1029		26175.2
Charcoal	Ton	95631	4097	4134		103862
Hours Worked	Hr	1953	4097	4047	6037	16134

Table 2: Indicators of Energy efficiency with the use of forest residues in the province of Guantánamo

Total Residues	U/M	Sawmills				Total
		Pueblo Nuevo	Toa	Cayogüin	Empire Furniture	
R Availability	Kg/s	7.439	3.38	3.92	2.19	16.929



% Beef Gasification	MWh	123	55.8	64.45	37.4	280.65
20% Loss due to Gas	MWh	25	11.15	12.9	7.5	56.55

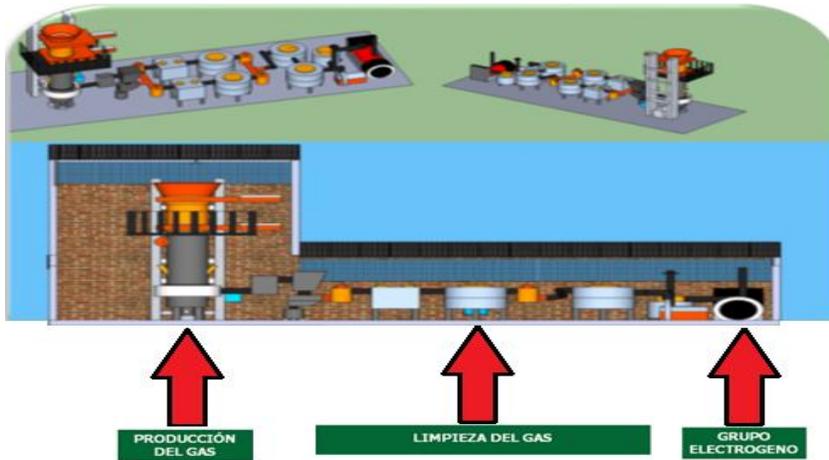


Figure 1: General diagram of the downdraft gasifier technology coupled to an internal combustion engine for electricity generation

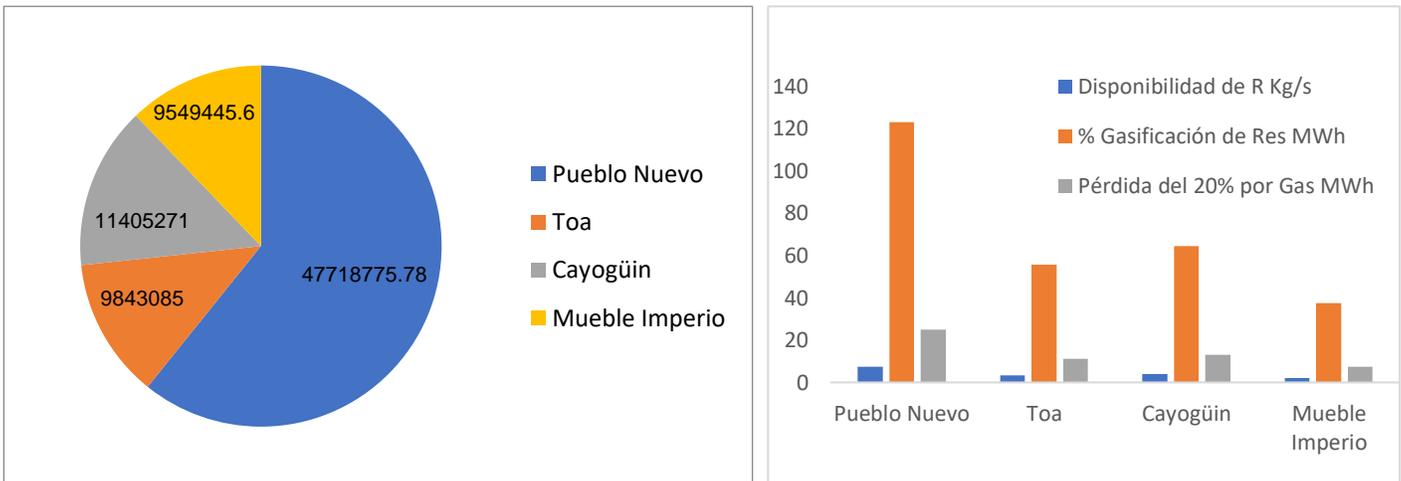


Figure 2: Trend of the energy efficiency indices in the Guantánamo sawmills.

Conclusions

As you can see the use of biomass as a renewable source of energy is a very diverse field, in our country, Cuba, there is a programme to take advantage of this energy. It should be noted that in the province of Guantánamo the main wood processing industry is the Pueblo Nuevo sawmill.

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Thematic Session 8: Climate, Environment and Natural Resources (II)

Forename(s), Surname(s) of the Speaker

Rosalía Andrade Medina

Title of the presentation: Sustainable Development of Coastal Communities through Blue Carbon Initiatives in Southern Mexico

Abstract

Blue carbon refers to the high capacity of mangroves, seagrasses, and marshes to capture and store CO₂, in turn supporting other social and environmental co-benefits. The presentation is based on a regional strategy for adaptation and mitigation to climate change called Taab Ché (mangrove in Mayan language), which through blue carbon market mechanisms promotes the restoration, protection, and sustainable management of mangrove ecosystems.

Introduction

Mexico has an area of 905,086 hectares of mangrove (Conabio, 2020). Mangroves are reservoirs and carbon collectors; they are a natural barrier against the impacts of hurricanes, feeding grounds and refuge of ecologically and economically important species for the livelihoods of coastal communities. In addition to carbon dynamics and their role as carbon sinks, a key function in mitigating climate change, mangroves as blue carbon ecosystems provide other fundamental ecosystem services such as: coastal protection against storms and storm surges, sedimentation, and compensation for the rise in average sea level, food security as areas for raising commercial fish in their fry and juvenile phases, sustenance of biodiversity, filtration of pollutants, among others (Alongi, 2008).

Regarding the role in climate change mitigation, mangroves, like all wetlands on the planet, store carbon in soils since the Holocene. The anaerobic conditions of its flooded soils prevent the decomposition of organic matter that accumulates over time (Gumbrecht *et al.*, 2017). That is why, the



exposure of soil carbon to aerobic conditions due to degradation or change of land use (for example, water drainage for agriculture, construction, or alteration of drainage by hurricanes) make them net emitters of Greenhouse Gases (CO₂).

Mangroves in Mexico store on average between 450 and 500 Mg C ha⁻¹ (Adame *et al.*, 2018; Herrera-Silveira *et al.*, 2020), being able to store even greater quantities than 1,000 Mg C ha⁻¹, as reported by Donato *et al.*, (2011).

The objective of the Taab Ché Project is to provide a financial incentive based on the voluntary carbon market to mangrove owners and to promote the generation of blue carbon credits based on the management, conservation, and restoration of mangroves in the Yucatan Peninsula region.

Methodology

The carbon baseline was determined at the local level with a level of certainty 2 (IPCC, 2006), based on the protocol for the measurement, monitoring and reporting of the structure, biomass, and carbon stocks in mangroves by Kauffman *et al.*, (2013). The pilot sites were analysed through Sentinel 2 and Landsat 7 satellite images using ArcGIS software, which obtained the zoning of each site and the classification for each area with mangrove vegetation by ecological type (basin, strip, chaparro and petén); the dominant species (*Avicennia germinans*, *Rhizophora mangle*, *Laguncularia racemosa* and *Conocarpus erectus*) and their condition (preserved, preserved in regeneration, degraded and lost -in which there are no longer shoots or there are dead mangrove trees, being generally another type of secondary vegetation-) were determined.

The analysis of the potential for generating carbon credits to participate in the voluntary market was estimated based on the total carbon reported in the APFFYB and ANP-Isla Cozumel warehouses and the estimated deforestation rates for each site (0.4% per year for Isla Cozumel and 0.04% per year for APFFYB).

Strategy Pilot Sites

Mangroves of two Natural Protected Areas in Quintana Roo: The Yum Balam Flora and Fauna Protection Area and state and federal ANP of Cozumel Island (Image 1) with an extension of 10,276 ha (Mendoza, 2019) representing 4% of the mangroves in the state of Quintana Roo.

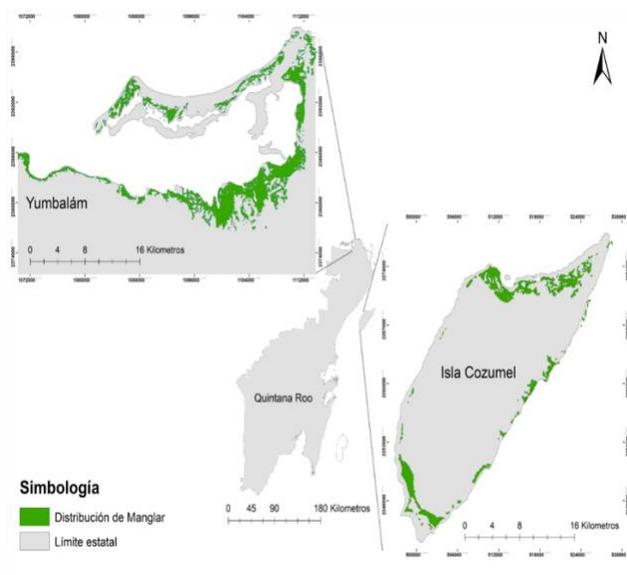


Image 1. Distribution and conditions of the mangrove in the APFFYB and ANP of Isla Cozumel.

Results

An area of 921 ha was identified under degraded conditions for the APFF Yum Balam, and ANP of Isla Cozumel with the potential to be restored (Table 1). The avoided emissions (REDD+) were estimated from the calculation of the mangrove area in conserved condition for the ANP in Isla Cozumel and the APFF Yum Balam of 9,875 ha (Table 2).

Table 1. CO₂ capture potential in 20 years in ANP of Yum Balam and Cozumel, Quintana Roo, as a result of the restoration of 921 ha.

Place	Surface restored in 20 years (ha)	Aerial component		Underground component (soil)	
		Total tC capture (20 years)*	tCO _{2e} capture (20 years)	Total tC capture (20 years)**	tCO _{2e} capture (20 years)
APFFYB	390	48,770	178,823	49,472	181,398
ANP Cozumel Island	531	66,362	243,329	67,318	246,833
Total extension	921	115,132.50	422,152	116,790	428,231

*Capture rates correspond to Teutli-Hernández *et al.*, (2016) and Erosa-Angulo (2016) equivalent to an air capture rate of 7.5 tC ha⁻¹ year⁻¹ for the first 10 years of restoration and 5 tC ha⁻¹ year⁻¹ for each subsequent year. These carbon increases (Corg) per hectare respond to the growth of aerial biomass.

** Arenas (2019) determined an accumulation rate of 6.34 tC ha⁻¹ year⁻¹ at restored sites in Quintana Roo, Mexico for the first 50 cm of the soil component.

Table 2. Potential for avoided CO₂ emissions in 20 years in an ANP of Yum Balam and Cozumel, Quintana Roo, based on the distribution of mangroves preserved in the pilot sites.

Surface in preserved condition (ha)	Average aerial carbon storage (tC ha ⁻¹)*	Average underground carbon storage (tC ha ⁻¹)**	Annual deforestation rate (ha/year)***	Total emissions avoided (tCO _{2e}) in 20 years***
Cozumel				
2,658	37.67	479.47	0.4%	407,006
Yum Balam				
7,216	43.09	707.60	0.04%	1,586,972
Total emissions avoided (tCO _{2e})				1,993,978

*/** Herrera-Silveira et al., (in preparation).

***The rate of deforestation was estimated according to the results of the analysis of satellite images specific to the areas of Cozumel and Yum Balam (Mendoza *et al.*, in preparation).

The Taab Ché blue carbon strategy, in its pilot stage, has a potential to generate 2,844,362 gross carbon credits, to which a risk buffer will be applied (estimated based on the Plan Vivo methodology), and equivalent to 20% of the carbon credits, generating 2,275,490 tCO_{2e} (carbon credits) that can be placed in the voluntary carbon market over 20 years.

Final Thoughts

Due to the high productivity of mangrove ecosystems to capture CO₂, restoring and protecting them is key to mitigating GHG concentrations.

In addition to mitigating GHG emissions, mangroves provide essential goods and services for adaptation to climate change, including coastal protection from extreme weather events and floods, regulating sea level rise and coastal erosion by functioning as blue infrastructure.

Promoting the participation of communities in financial mechanisms, such as the voluntary carbon market, is an opportunity for actions at the local level in line with the SDG 2030 agenda.

The feasibility of a blue carbon project within the voluntary market represents an opportunity to encourage the conservation and restoration of ecosystems that provide important environmental services at the local and regional level in Latin America and the Caribbean; however, its success will depend on various social, political, economic and territorial management factors that depend directly on the degree of acceptance and support of civil society, and where the type of link between institutions, federal, state and municipal authorities and citizens is decisive.

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Forename(s), Surname(s) of the Speaker

Graziela dos Santos Paulino

Title of the presentation: Application of Nanocrystals and Coffee Residues to produce Biodegradable Methyl Cellulose Films

Abstract

One of the biggest environmental challenges of this century is to reverse and reduce the environmental damage caused by the high consumption of plastic materials. Among the viable alternatives is the development of environmentally friendly bioplastics. Here, we produced cellulose nanocrystals from coffee residues and evaluated their capacity as reinforcement in biodegradable methyl-cellulose films. In addition, the developed films were functionalized with antibiotics and tested as a matrix for the slow release of substances for food conservation. The nanocrystals increased the thermal resistance of the polymer with the success of slowly releasing the incorporated substances. These results collaborate for the development of green technologies that can be allied to sustainable development.

Introduction and Development

In the last decades, research in several fields including biomaterials, renewable energy, and green chemistry gained prominence. The three branches of research aim to develop technologies capable of partially or supplying the different market demands, and at the same time reducing the use of non-renewable raw materials and their environmental impact (Bozell, 2001).

One of the most recurrent applications is the exchange of molecules from non-renewable sources for molecules from renewable and less polluting sources. In the fuel industry, for example, we have the production of second-generation ethanol, via fermentation of sugarcane bagasse. We can cite other examples of the biotechnological use of these molecules, such as the production of palmitic acid from vegetable oils, the manufacture of xylose and glucose via enzymatic degradation of cellulose, the production of biosurfactants by microorganisms, and the reuse of waste, such as urban sewage and plant biomass for clean energy production. In the area of sustainable packaging, we use green polymers to create less polluting plastic materials, in bioengineering, we use biopolymers applied to tissue implants or even as conductors (Cherubini, 2010; Bozell, 2001; Sun, 2011; Galambeck, et al., 2018). Biomaterials have some physicochemical characteristics resulting in advantages over synthetic materials. Among them are low toxicity, biocompatibility, good thermal and mechanical resistance, and natural degradation (Kumaran, 2020).

Agricultural residues are a rich source of biomolecules and the reuse of these biomasses to produce value-added products with high environmental appeal has gradually increased over the years. Brazil is the world leader in coffee production, followed by Vietnam, Colombia, and Indonesia. Coffee processing generates a huge amount of biomass residues from this fruit, around 50% of all processed coffee is a by-product, among which are low-quality beans, coffee straw, and washing water (Embrapa, 2021). All this residual biomass is rich in molecules that can be applied in several sectors, such as in the production of fuels, foodstuffs rich in vitamins, polymeric materials, biogas, bio-oils, and extractives, including caffeine and antioxidant compounds (Janissen & Huynh, 2018).

Despite all this applicability, this residual coffee biomass is not reused sustainably. Most farmers burn this material in the open and discharge the wastewater from the washing process into natural



waterways. These activities negatively impact the environment, emitting toxic gases such as CO₂ and methane, causing the accumulation of toxic substances for marine and human life, increasing the level of organics, especially fibers, sugars, and proteins, which causes acidification of freshwater, thus killing microorganisms of biological importance for aquatic balance (Minuta & Jini, 2017; Mussatto, et al., 2011)

Thinking about making the coffee production chain more sustainable and taking advantage of the energy contained in the residual coffee biomass, we proposed in this work to produce cellulose nanocrystals from low-quality Arabica coffee beans and apply these nanocrystals as reinforcement for the polymer matrix. of methylcellulose, the films produced were functionalized with antimicrobial molecules, and their ability to release these antibiotics was tested.

The production of cellulose nanocrystals was carried out in three stages:

- a) Isolation of cellulose from lignocellulosic fibers of coffee residues
- b) Acid hydrolysis of biomass to produce nanocrystals
- c) Physicochemical characterisation of nanocrystals

In Step (a) we used alkaline treatment to purify and increase the cellulose content in the coffee fibers, for this purpose, we used an initial clarifying solution of NaOH at 50°C, this solution was able to remove hemicellulose, proteins, oils, and waxes. In step (b) we use a 24:4 NaOH/H₂O₂ solution to solubilize the lignin present in the coffee fibers. The cellulose, lignin, and hemicellulose content were quantified using gravimetric and spectroscopic methods, the quantification showed what was already visible to the naked eye, there was a reduction in the amount of hemicellulose and lignin, and an increase in the amount of cellulose, and the cellulose corresponded to 37% of the weight of the clarified coffee fibers. After the steps mentioned above, the acid hydrolysis of coffee cellulose was carried out, using hot sulfuric acid 58% w/v to manufacture cellulose nanocrystals, which were then dried and characterised by Atomic Force Microscopy, Zeta Potential, Infrared, and X-Ray Diffractometry. The reaction yield was 77% and the cellulose nanocrystals presented needle morphologies as is common to nanocrystals, in addition, they presented a crystallinity index of 67%, therefore, it behaves as a crystalline material capable of being applied in several ways, such as reinforcement of polymeric matrices. The nanocrystals solution proved to be stable between pH 6-10, so the stability range is consistent with the pH of neutral and basic solutions.

The concentration of 4% m/m of produced nanocrystals was added into the polymeric solution of methylcellulose with a concentration of 1.5% m/v, the films were made by the casting method and dried at 37°C. The methylcellulose films with and without coffee cellulose nanocrystals were characterised by Thermogravimetry, Colorimetry, Moisture Content, FTIR, and UV Spectroscopy. When analysing the results, we noticed that the presence of cellulose nanocrystals increased the thermal resistance of methylcellulose films by 20%. Nanocrystals also contributed to the transparency of the films and increased UV light retention capacity in the 200-350nm range. Therefore, coffee cellulose nanocrystals were able to increase the resistance to degradation thermal properties of methylcellulose films, contribute to transparency and decrease the absorption of UV light, these are interesting characteristics for application in packaging. We also tested the molecular retention capacity of methylcellulose and methylcellulose films with nanocrystals. We added clinical concentrations of antibiotics to the films and observed the formation of an Escherichia Coli growth inhibition halo, we noticed that the films containing cellulose nanocrystals retained the antibiotics longer when compared



to films without cellulose nanocrystals, so the nanocrystals acted as a retainer of these substances, this corroborates the application in biomedical areas such as in the creation of different dressings or drug delivery devices.

The use of biomaterials and plant or microbial biomass is still an area of recent scientific exploration, however, studies have already demonstrated the great potential that these areas have. More studies are needed so that the technologies developed in this area are applied efficiently and on a large scale, which would be an excellent way to build a more sustainable society. This work demonstrated that we can use the characteristics of biomolecules present in plant biomass residues, such as coffee, which are often wasted during the transformation process, to improve biodegradable films and even create devices with biomedical potential. Initiatives such as Young Scientists' Networks Days promote interaction between researchers with the same objective, to make society more sustainable. These initiatives help to create networks of intellectual support and sharing of ideas and actions, which can collaborate for the reuse of plant biomass of different natures. Especially, between countries with a high level of agricultural activities such as Latin America and the Caribbean, and countries with high technological development such as from Europe.

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Forename(s), Surname(s) of the Speaker

Luis Ernesto Núñez González

Title of the presentation: Biopolymers - Solution to plastic pollution? (Universidad del Valle de Guatemala)

The speaker has not submitted a paper for the purposes of this publication.

Forename(s), Surname(s) of the Speaker

Carolina Vargas Vanegas

Title of the presentation: Providing a fair and efficient mechanism of water resources based on a cooperative game generates an alternative life for people

Abstract

This work is the result of a research work that finds through the production function Cobb Douglas and Cooperative Agreements: Value of Shapley an efficient and fair solution to the water problem presented between the community of San Antonio de Cuanixtepec located in the northern highlands of the State of Puebla in Mexico and a hydroelectric company that finds in the Ajajalpan River an important source for the development of its hydroelectric project. It also shows the importance in cooperation of continuing to work on this type of investigative procedure between Colombia and Mexico.

Introduction

In rural areas it is observed how the industry uses water and how this situation sometimes limits the access to the water of the communities that inhabit there, generating in cases the overexploitation of the resource given the fragility of environmental standards. This negative impact encourages an allocation that is not fair for access and inefficient in relation to maintenance and quality for the inhabitants of the area. In addition, water is used as an input and provision of large quantities of economic goods and services (Llop, 2018). Klink (2018) mentions that: i) Water as a factor of production will depend on how efficient it is; ii) Water as a financial asset is considered a non-renewable resource, that is, it is depleted and iii) Water as an eco-social asset satisfies a set of economic, social and environmental functions, both quantitative and qualitative.

For the development of this project, the Theory of market design has been used to generate water allocations, so Li et al., (2020) show how economic, social and environmental compensations in agricultural systems can be elaborated through game theory. Similarly, in the central desert region of Iran, the allocation of water resources to maximise labour economic growth due to natural constraints is shown (Davijani et al., 2016). In addition, the Rio Grande basin in the United States affects the economic development of the Duran-Encalada et, al. (2017) community proposes a cooperative game between economic agents that can reach a conciliation that benefits farmers and entrepreneurs.

The main contribution of this work lies in providing a fair and efficient mechanism of water resources based on a cooperative game in which a proposal for the allocation of water resources is generated for the sector located in the community of San Antonio Cuanixtepec and whose intention analyses the needs of this population together with the national hydroelectric plant. This approach can simultaneously balance expected benefits, penalties, and risks of agricultural water allocation, and can address the uncertainties of agricultural water supply and demand in the form of probability distributions and intervals with random boundaries. The database is built in a simulated way and allows

to know the Shapley Value, taking some data from the National Water Commission (CONAGUA) in relation to water resources such as the speed of recovery and consumption made by the national industry.

Content

The World Health Organisation (2021) mentions that water for consumption and use generates the need to protect the health of its inhabitants since diseases such as diarrhea, cholera, among others, are avoided, for this reason, the work developed generates a fair and efficient allocation with the purpose of preventing problems at the level of public health and possible internal migrations; so the San Antonio Cuanixtepec community by maintaining adequate conditions of the Ajajalpan River achieve agricultural activities and drinking use, for this reason the National Hydroelectric Company being interested in water access could implement a design of centralised mechanisms based on cooperative games for sheltering and protection of the community's water.

The economic agents participating in this research work are given by the industry and the agricultural community located in the municipality of Hermenegildo Galeana in the North of the State of Puebla in Mexico, so when considering a cooperative game that guarantees a non-overexploitation of resources and the care of their quality can be shown through the set of players represented by J ; considering that the set J contains the sets $C = \{c_1, c_2, \dots, c_n\}$ and $E = \{e_1, e_2, \dots, e_m\}$, that is, C and E are the communities and company close to the water resource R , so that they satisfy production and consumption needs. In addition, R has an availability of q_R liters per day.

For simplicity preferences are represented by the utility function of type Cobb Douglas like this: $U(x, y) = x^a y^b$ where $x = \text{water}$, $y = \text{other inputs/goods}$. And A is preferable to B , when $X > Y$. According to the order of preferences of any element of the population (Nicholson and Snyder, 2014). To model the allocation of water between the community of San Antonio de Cuanixtepec and the company that share the preference for the Ajajalpan River, it is considered a cooperative game that guarantees the non-overexploitation of resources and the care of their quality.

The activities of the agents in J impact on the quality of the water; where θ_k is the impact of the agent k on the quality of the water concentrated in the resource R . Where x_S is the allocation of water for a set of agents $S \subseteq J$, we measure the quality of the water by the function T such as $T(x_S) = \sum_{k \in S} \theta_k x_k$. So, an allocation $x = (x_C, x_E)$ of the water resource is efficient when $\sum_{k \in J} x_k \leq q_R$ y $T(x_S) \geq \theta$ for all $S \subseteq J$, where θ is a minimum of quality. In other words, an efficient allocation does not overexploit the resources of aquifer R per day and maintains acceptable water quality. In addition, the allocation is fair when $V(S) \geq \sum_{k \in S} v_k$; that is, the value they derive from cooperating with each other is greater than the value they would gain from acting independently. The development of the research wants to show that in order to reach a cooperative agreement between the hydroelectric company and the rural community, a cooperation effect must be produced between them, and thus be able to find a common benefit by forming a coalition between these players.

Conclusions

The production function Cobb Douglas equation proposed in this project offers a benefit in the distribution of water resources to the two economic agents involved: Hydroelectric and rural community since it promotes the principle of justification and well-being because it takes into account

the needs of the two players, in this way within the Cooperative Agreement through the Shapley Value that manages to allocate the aquifer resource in which the needs are satisfied and its quality is guaranteed together with the non-overexploitation of the resource; In addition, when it comes to Design of mechanisms, the government's intervention is evidenced, which in a favourable impact allows the reallocation of water resources. In the following graph it is evidenced for the set $J = 16$ players for whom $C = 15$ and $E = 1$ and taking into account that E it occupies the position number 13 because it corresponds to the one who uses the largest amount of water resources

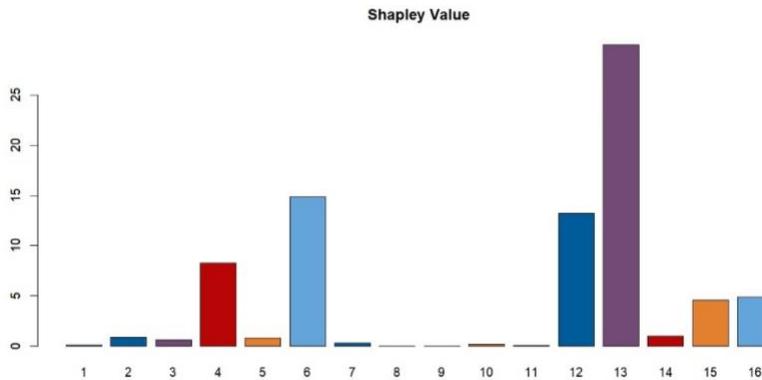


Image 1 Shapley value of 16 players. Own source.

Additionally, this project presents a cooperative relevance indirectly between the United Mexican States through CONACYT by allowing the participation of foreign students, in this case Colombia, since the research is the result of the Master's Degree in Applied Economics studied at the Autonomous University of the State of Puebla (UPAEP), this academic union strengthens the relations between both regions since work has continued from the University Corporation Minuto de Dios – UNIMINUTO headquarters Pereira (Colombia) and as a result the first application of a project financed by the School of Public Accounting is achieved in the Call for Research Groups without Active Projects of the Scientific Park of Social Innovation (PCIS). In addition, the project is carried out with its own line of research of the CODICE Research Group and a high-impact article continues to be written so that the results of this union allow CODICE to be recognised by the Ministry of Sciences of Colombia (MINCIENCIAS). In this way it is understood that knowledge when shared achieves lasos to continue building and expanding solutions that benefit communities such as those presented in this work.

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Forename(s), Surname(s) of the Speaker

Melisa Jabif

Title of the presentation: Conflicts over water in the context of a pandemic: The collective construction of responses through community infrastructures (National University of Tucumán; CONICET)

Abstract

The health emergency due to COVID-19 that the world is still going through today, deepens in Argentina the pre-existing socioeconomic and territorial inequalities. But it also highlights strategies carried out by organised civil society to respond to certain needs.

The presentation is located in the Metropolitan System of Tucumán, and takes the vulnerable riverside neighborhoods, east of the agglomeration. Based on the analysis of interviews with neighborhood referents, in this framework, we reflect on difficulties that arose to comply with sanitation measures given by governments in relation to water use and presents a survey and georeferenced map (in the process of construction) of organisations that are acting in the territory of MeSyT.

Introduction

The COVID-19 pandemic has deepened existing inequalities in the cities of LatAm and the Caribbean. As happened in hundreds of countries, in Argentina the national government had to resort to strategies to delay the rise of the contagion curve, such as Social, Preventive and Mandatory Isolation (ASPO) and the intensification of hygiene and sanitation recommendations. However, the popular sectors, violated in access to their rights, including water, have few tools to comply with these measures.

Within LatAm and the Caribbean, Argentina is one of the countries with the best percentages of population served by drinking water networks, yet an unequal distribution of the resource persists;

this is what happens in the area of the Metropolitan System of Tucumán¹⁵ (MeSyT), especially in the municipalities of the East (Besana & Fernández Bouzo, 2018).

"Defining public problems as socially constructed is already part of common sense, at least it is in the social sciences." In line with this, social organisations in the province of Tucumán assume a fundamental role, which has gained more strength since being declared the ASPO. But none of this is sustainable over time if you do not have the basic infrastructure for a dignified life. (Gutierrez, 2018, p. 5)

Based on a previous analysis of the surveys carried out on territorial referents within the framework of the national survey¹⁶ on the social impact of isolation measures in Tucumán, this presentation reflects on the difficulties that arise in vulnerable neighborhoods¹⁷ to comply with sanitation measures; and aims to show the relevance of the responses of organised neighborhoods, based on the generation of a "community map"¹⁸.

Access to water and pandemic

Within the Sustainable Development Goals, SDG 6, as a response to COVID, states that the pandemic "has highlighted the vital importance of sanitation, hygiene and adequate access to clean water to prevent and contain diseases". The WHO, in turn, assures that hand washing is essential for the prevention of infections.

Although Argentina adheres to these declarations and international treaties that recognise the right to water as a Human Right, the problem is far from being resolved. From the hydrographic point of view, the distribution of water over the earth's crust has been uneven and changing (Micou, 2021), so it is inferred that it is a problem of governance (Tello Moreno, 2008), rather than scarcity.

These inequalities are gaining momentum in the poorest peripheries of cities. This is the case of the East Subsystem¹⁹ (SSE) of MeSyT (Casares, Marta; et. al, 2016). Geographical cut in which conflicts over water are visible in the modalities of access and distribution, and in the relationship between the population and the Salí River, that crosses the territory and presents high levels of pollution generated by various anthropic activities. As for having drinking water inside the house²⁰, in the MeSyT there is a

¹⁵Urban agglomeration with administrative jurisdictions with functional links in the conurbation of Tucumán and the infrastructure that allows its existence: environmental assets, populated localities, accessibility and interconnection infrastructure, productive and logistical equipment on a metropolitan scale, which support the competitive performance of the agglomerate. It houses, in addition to the jurisdictions that make up the Gran San Miguel de Tucumán (INDEC, 2010): 7 municipalities and 19 Rural Communes (Casares & Jarra, 2009).

¹⁶The administration of the questionnaires was carried out by social research institutes with a territorial approach: OFUT, ISES, INTEPH, INVELEC.

¹⁷They present precariousness in tenure and in most of the dwellings; few or no services; environmentally degraded.

¹⁸Within the framework of the Project *New Urban Programme, Tools for local management in COVID scenarios*.

¹⁹ The LEM-DAMI report distinguishes two subsystems that concur in the MeSyT: West (SSO) and East (SSE). The latter is linked to the territory and the urbanisations bordering the basin of the Salí-Dulce River. It is a "sector of conditions of complex criticality and opportunity".

²⁰ Census National Housing, Argentina. 2010



clear inequity between the West and the East Subsystem. In turn, the sectors with the lowest percentages of houses that have drinking water are in the most vulnerable areas²¹.

Some of the people interviewed stated that the situation of overcrowding is complex and common in these sites; and 17% highlighted the challenge it represented for the most vulnerable sectors to carry out actions that seemed daily and simple, such as *washing their hands*.

The use of alcohol gel and bleach is not recognised as justifiable in situations of high vulnerability, where the infrastructure is deficient, there is no drinking water in homes and as if that were not enough, the river only returns a bad smell. Regarding access to information, a referent reported that "effective communication is given from person to person. A lot of false information. In addition, habits and resources are lacking".

When crises are triggered, they leave exposed many others that had not surfaced, but were latent (Gutman, 2020). In these neighborhoods, poverty and socio-territorial fragmentation have gained a strong role as a result of the pandemic.

Community Infrastructures: a collective response

The actions of organised civil society in the territory were recovered, understanding that they have worked quickly in the face of the needs of the most vulnerable populations. Through "bottom-up" mechanisms, they were and are an alternative way out of the emergencies that arise in everyday life and on proximity scales.

Based on the data provided by the interviews, to which was added the survey carried out within the framework of the elective subject "Women, gender and habitat (+ city + rights + inclusion)"²², a community map was generated for the territory of the MeSyT through the Google *MyMaps* platform, since it is a useful tool to work collaboratively.

The map has so far 53 georeferenced points, among which are organisations with and without legal personality.

The availability of the map has three objectives:

- Informing citizens about the community services provided in the vicinity of their neighborhood.
- Making visible the work of social organisations and the needs they also present.
- Investigating the unmet daily needs of vulnerable neighborhoods by generating *buffer zones* of georeferenced points.

Final Thoughts

Within the scope of this presentation, it is key to make visible the conflicts, as well as the collective exits of the organised vulnerable neighborhoods, since they represented during the pandemic (and continue to do so), the true axis of struggle and resistance to guarantee rights already conquered in other countries.

²¹ Defined based on indicators: education, population structure, birth rate, housing differences, poverty. A vector layer of polygons was carried out with three vulnerability zones: high, medium, and low for the urban radii of the SiMeT; we worked with the Informal Settlements layer (IPVyDU /OFUT, 2016) and the Survey of Popular Neighborhoods (ERSEPT, OFUT, DPE, RIDES, IDET).

²² Faculty of Architecture and Urbanism-UNT. Teacher: Dr. Arq. Natalia Czytajlo (OFUT-FAU-UNT/CONICET)

In this sense, the relevance of the map as a resource is recognised, which shows that community infrastructures are located on the peripheries of the city and in the foci of greater socio-environmental fragility, and GIS as a dynamic tool and generator of networks, on a local and global scale.

In the field of international cooperation, it is worth recognising the experiences of different countries and what were the tools developed to alleviate the COVID-19 crisis, especially water scarcity.

The vulnerability of LatAm and the Caribbean and its unequal structure with respect to Europe in terms of the use of natural resources, shows that the differential challenges of LatAm and the Caribbean require international cooperation and as proposed by ECLAC, the search for Nature-Based Solutions to achieve sustainable and resilient water management to face the main water challenges.

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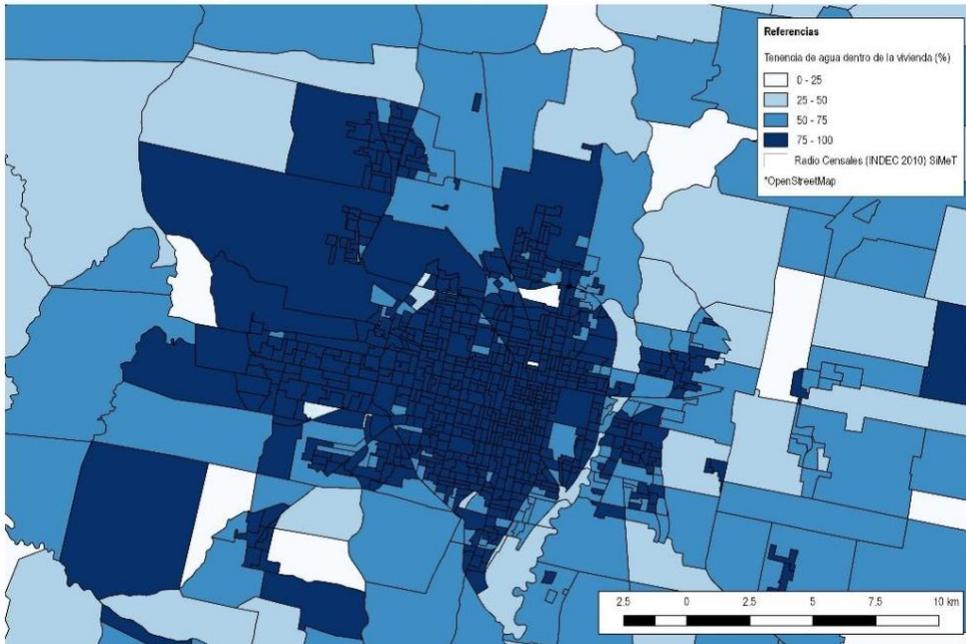
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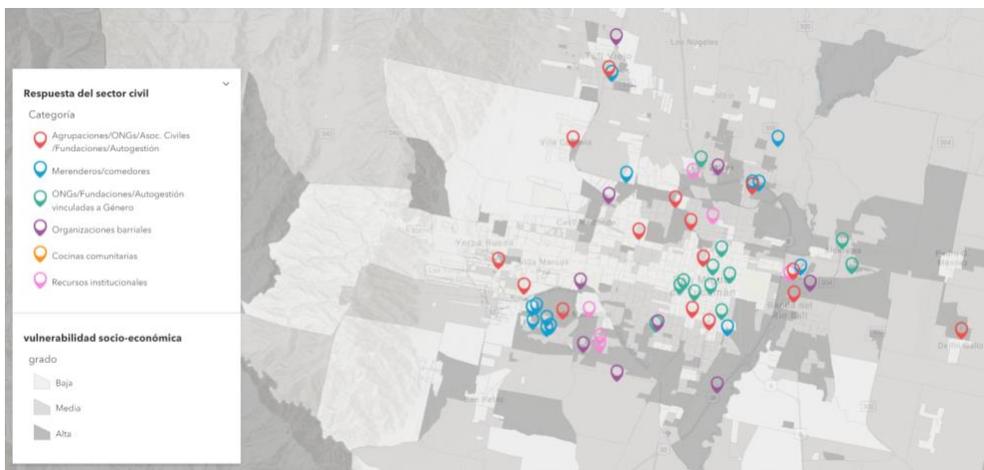
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Maps



Map 1: Households with water possession inside the house in the MeSyT. Year 2010 (%)
Source: Own elaboration (2020) based on census data (INDEC, 2010)



Map 2: Community equipment in the MeSyT territory. Year 2021



Forename(s), Surname(s) of the Speaker

Aladino Ricardo Andrés

Title of the presentation: The commodification of water as a source of socio-environmental conflict in Mendoza during December 2019 (National University of Cuyo)

Abstract

This paper is an exercise in reflection that aims to contribute to a broader investigation about the growing commodification of public goods, including water, as a social, economic and political problem, through the genealogical analysis of the art of neoliberal government, the critique of neoliberal biopolitics and its paradigm of dualisation – separation society vs. nature and the historical approach to the popular struggle of Mendoza in defense of Provincial Law 7,722 of December 2019.

Introduction

From the analytical tools provided by the Political Theory of the State in Latin America (rationalities, forms of statehood) and environmental history and political ecology (appropriation, privatisation and commodification of public goods, although scarce, such as fresh water), we can make the pertinent questions to the capitalist social form – in its neoliberal and extractive phase – based on the processes of accumulation and dispossession²³.

As a hypothesis we maintain that the question of water has a transversal character in the policies of Latin American governments, its appropriation and privatisation are key factors in capitalist accumulation but endanger the very conditions of all human and non-human life on the planet. That is why it is urgent to question this form of colonisation of public goods – which belong to each one of us – and to propose different models or systems that do not imply either the end of biodiversity or the sustained impoverishment of vast social sectors. That is why everyone, including *Abya Yala*²⁴, must be firm in the defense of the environment, which will only be possible with the union of peoples.

As general objectives we propose to systematise the main characteristic notes of the genealogy of neoliberalism, as well as to refer to the current context in terms of paradigms and institutions involved in the dispossession of goods. In close relation to these general objectives, we set ourselves the

²³ From Critical Geography, the British Marxist social theorist David Harvey (85), raises the concept of accumulation by dispossession as a distinctive feature of contemporary capitalism, in his article "The 'new' imperialism: accumulation by dispossession", first published in 2004 in the *Journal Socialist Register*. It refers to the permanent role of predatory practices, fraud, violence that involve the commodification of new areas and goods that until now were on the margins. These processes allow us to understand the increasing violence on populations and the natural environment (Harvey, 2004: 3 et seq.).

²⁴ Term with which the indigenous people of Cuna, Panama, call the American continent in its entirety. In their language it means "mature land" or "land in full maturity". Since the mid-twentieth century, its use in written documents and oral statements has been suggested to allude to the set of native peoples of these lands.



specific goals of *addressing the alternative Altépetl* paradigm²⁵ of the indigenous peoples and analytically reconstructing the events that occurred in Mendoza as a result of the conflict over the defense of water and the popular rejection of polluting mega-mining²⁶.

We will also present the conclusions we have reached the way in which our theme has relevance for cooperation between Latin America and the Caribbean and the European Union and how the results of this analysis can contribute to strengthening relations between actors in both regions.

Genealogy of the Art of Neoliberal Government and Periodisation in Our America

Neoliberal rationalities imply a growing deterioration or destruction of the living conditions of broad swaths of populations and other non-human life forms (Murillo, 2020: 8).

The genealogy of this art of government, which breaks with the liberal tradition and its principle of universality of rights, dates back to the late 1930s and, after the end of World War II, is instituted as a project of global government of the populations.

The first of the neoliberal "think tanks" is the *Lippmann Colloquium*, held in Paris in 1938. There several of the members of the Austrian School exhibit: Friedrich von Hayek (famous with the work *The Road to Serfdom* that he published in 1944, in which he questions the planned economy of socialism and advocates the implementation of a social market order), Ludwig von Mises (Hayek's teacher), Raymond Aron among others. It is proposed to reform the state form at the service of companies to disseminate and implement a form of business governance.

In Latin America, the initial moment of the establishment of neoliberal policies is the coup d'état in Chile against the socialist president Salvador Allende on 11 September 1973. Since then, there has been the opening of the neoliberal cycle that will have the region as a laboratory of experimentation and the Chicago School – whose most conspicuous exponent is Milton Friedman – as one of its beacons in the production and dissemination of neoliberal ideas. The path chosen is the implementation of civic-military dictatorships in the Southern Cone and the implementation of state terrorism as a historical–state form.

The neoliberal commodification of water resources in the face of the indigenous worldview of water as *Altépetl* (Water Mountain)

Water is a tangible natural good, its availability in conditions suitable for consumption and use of human and non-human life forms, it is one of the many guarantees of habitability of the planet and that makes possible the existence of biodiversity. Therefore, it is also considered a public good – something that belongs to everyone. However, in this area, neoliberalism presents a profound break

²⁵ As we will see, it is the worldview of the mesoamerican native peoples, who comprise much of the current Republic of Mexico. This look can be complemented by the *Buen Vivir* of Andean communities that contemplate sustainable development, equitable redistribution of natural resources and wealth.

²⁶ The contests for the defense of water are not recent. The first inhabitants of the northern oasis of Mendoza, the Huarpes, since the sixteenth century, with the colonisation and conquest, have been confronting this central issue in the life of the indigenous peoples of Mendoza. Ignoring or omitting their struggle is yet another way to contribute to colonialism.

with rationalities of appropriation, privatisation, extraction and financial capitalisation of water resources (dominant discourse of global water governance).

At the level of concrete action, in the face of the neoliberal onslaught, we find the worldview of the indigenous people who inhabit the current Republic of Mexico: Altépetl (Water Mountain) union of earth, water and sky, humanity as part of nature and not outside of it (Martínez Ruiz, 2014: 2 – 3).

The neoliberal offensive against the water of Mendoza and the popular reaction of December 2019

On 19 December 2019, a few days after assuming the governorship, Rodolfo Suárez publicly announced the modification of Law 7,722 to make the use of toxic chemicals (cyanide, sulfuric acid and mercury) more flexible, enabling fracking (hydraulic fracturing, drilling method to obtain gas and oil) under the argument of generating employment and enhancing the economic takeoff of the province. This provoked the reaction of numerous associations and socio-environmental movements grouped around the slogan emblem: "The water of Mendoza is not negotiated", as this is a scarce resource in the province.

On the 20 December is approved Provincial Law 9,209, called the "cyanide law" (Wagner, 2020: 88), which encourages and intensifies popular and street demonstrations of express social rejection. The protest and riots far exceed the events of the "Mendozazo" (which occurred from 4 to 7 April 1972), making it the most significant town so far in Mendoza.

Law 7,722, "Guardian of the Water of Mendoza", is saved by the popular demonstration, since on 30 December 2019, the amending law is repealed. For the moment, the triumph of the people in favour of the environment is assured.

Conclusions: towards a necessary cooperation between Latin America, the Caribbean and the European Union in defence of public goods

The alarming statistical figures that confirm climate change and ecocide in several regions of the world (year-on-year increase in temperature, fires, floods due to deforestation, decline of glaciers) must mobilise us as humanity for the defense of our common habitat: the planet earth and the natural environment that surrounds us and provides the resources we need so much for subsistence.

Keeping ourselves in inaction, indifference or apathy can cost us dearly since the maintenance and survival of all forms of human and non-human life is at stake.

Forms of active participation can include awareness campaigns, propaganda, collaborative international networks, presentation in regional blocks of laws with an environmental perspective (in Argentina progress is being made towards a Wetlands Law), among others.

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Thematic Session 9: Epistemology of Science and Research Practice

Forename(s), Surname(s) of the Speaker

Jonathan Ezequiel Aguirre

Title of the presentation: Higher Education and The Academic Profession in Argentina: An Interpretive Study on the Expansion of National Postgraduate Training in the First Decades of the 21st Century

Abstract

The paper presents the first inquiries of an investigation carried out within the framework of the National Council of Scientific and Technical Research of Argentina. It analyses the expansion of postgraduate training in the country and its impact on the development of the national academic profession from documentary sources and official statistics, the results of the APIKS international survey and the biographical narratives of academics from the National University of Mar del Plata. Thus, the proposal contributes, from the narrative and biographical methodology, to expand the horizons of research in the field of postgraduate training and the Argentine academic profession from the voices and experiences of university professors.

Presentation

In the session No. 9 of the Young Scientists’ Networks Days of the European Union, Latin America and the Caribbean 2022 we made visible the first lines of research of a project that has begun this year within the framework of the National Council of Scientific and Technical Research of Argentina but which, at the same time, gives continuity to our Postdoctoral Research deployed in 2020-2021 as part of our training at the National University of Tres de Febrero, Argentina.

In the previous inquiries we analysed the plots presented by postgraduate training in the Argentine academic profession based on the results of the international APIKS survey (Academic Profession in the Knowledge-Based Society) and the biographical narratives of the professors at the National University of Mar del Plata. In this new research project, we propose to deepen the biographical and narrative look of the object of study, but at the same time we will investigate the systemic phenomenon of quantitative and qualitative expansion that has experienced the postgraduate level in Argentina but also in Latin America in recent decades. We even delve into a complex but necessary question to investigate how this expansion has affected the Argentine academic profession and the postgraduate training of university teachers and researchers. Reaching a certain degree of

approximation to this response implies not only placing ourselves methodologically in statistical and macro-systemic coordinates, but also delving into the biographical experiences of those who have lived the process, have been trained in this context and deploy their profession daily in national universities.

Theoretically and epistemologically, we assume the academic profession in the global arena and, specifically, in the Latin American space, in the last three decades, as an object of study in constant expansion (Marquina, 2020, Centeno and Aiello, 2021). The rise of its research approach crystallised as the various processes of educational reform in Latin America and the constant complexity of regional and international higher education advanced. Issues related to the processes of evaluation and accreditation by the State with respect to universities, their government, the research carried out therein, the links with other science and technology organisations, the management and internal organisation of universities, the increasingly dynamic relations between industry and university activity are just some of the modifications that complicated the traditional functions of teaching and research that define the object of study in the evolution of the decades of the '80s, the '90s and the 2000s respectively (Clark, 1987, Altbach, 2005; Fernández Lamarra and Marquina, 2013; Marquina 2020).

In the research, we also use the theoretical and empirical backgrounds mentioned, and at the same time we deepen the thematic and methodological line of research initiated in our doctoral and postdoctoral studies within the framework of the Research Group in Higher Education and Academic Profession (GIESPA) of the Center for Multidisciplinary Research in Education (CIMED) of the Faculty of Humanities-UNMDP, and the work carried out by researchers from the two groups within the framework of the APIKS project around one of the constituent aspects of the Argentine academic profession, such as the updating and training of university teachers and researchers at the postgraduate level. A qualification that assumes a particular and subjective complexity different from other previous educational instances traversed by the subject (Mancovsky and Moreno Bayardo, 2015; Aguirre, 2020).

Our research recovers as an initial hypothesis that the growth of the postgraduate level and the postgraduate training of academics is due, in large part, to the development, evolution and complexity that the profession and university work evidenced in the last three decades in the country and in the Latin American region (Barsky and Dávila, 2004; De la Fare and Rovelli, 2019; Araujo and Walker, 2020). Although the postgraduate level finds its initial development in Europe and the United States in the 1950s, in Latin America it presents a late growth characterised "by an uneven development between the countries depending on the educational traditions and the particular legislations and instruments of educational policy implemented, the advances of the different disciplinary fields and the national markets" (Araujo and Walker, 2020: 13).

The growth and evolution of postgraduate training in terms of diversity of formats, curricular and pedagogical proposals, greater propensity to internationalisation and a marked increase in the number of graduates in countries such as Argentina, Brazil, Chile, Colombia and Mexico, has been associated with scientific-technological progress and its impact on the economic-productive and social spheres, this gives rise to the demand for new knowledge and continuous training to respond social needs, greater specialisation within the professions and increasing competition in labour markets. The expansion responds to these requirements that are configured as the privileged space of transnational

education, characterised by the emergence of new disciplines, interdisciplinarity, specialisation and internationalisation. It should be noted that another growth factor, shared by most countries, has been academic policies for university institutions in which the postgraduate credential for admission, or promotion in teaching positions, began to be required, as well as research incentive policies in which postgraduate studies became a requirement for career advancement as a researcher and for research. obtaining additional salary rewards.

The Argentine postgraduate training and its development in recent years is configured in a central element for the field of studies on higher education being approached from multiple research constellations. One of them, worked on in our postdoctoral research, is aimed at analysing postgraduate training based on its links with the academic profession, since "the requirement of possession of that degree becomes inescapable to access certain professional fields, mainly for entry into the various forms of the academic and research career" (Unzue and Rovelli, 2020: 38). The literary review in this sense allows us to affirm that postgraduate training can be investigated, in the same way, from prisms that place at the center of the analysis the experiences of the subjects who pass the instance of training. A training that involves multiple complexities of an institutional, labour, economic, academic, and particularly emotional and vital nature. In some way it implies turning towards the stories, experiences, affectations, and trajectories that are forged and built from and with the subjects who pass through the postgraduate level.

From this perspective we propose as a second working hypothesis that the "expansion of the biographical, from its epistemic, methodological, ethical and political motion" (Porta, 2021:19) and of studies with and from the everyday (Rockwell, 2018), as a possibility of narratively investigating the educational experience (Porta, 2021), become powerful channels to recover, from the voices narrated by the subjects, the subjective experiences that unfold in their training as teachers and university researchers.

Finally, we assume the complexity of the academic profession and the training of university teachers as a fundamental premise of analysis. By epistemically and methodologically interweaving the mixture of statistical approaches and compared with the biographical and professional experiences narrated by the academics of our university, we are able to understand in greater depth not only the socio-territorial particularities assumed by the university academic profession in our region, but the senses and meanings that the teachers/researchers themselves attribute to it when narrating it biographically.

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Forename(s), Surname(s) of the Speaker

Darby Darwin Gutierrez Guevara

Title of the presentation: Institutional problems in research practice and behavioural sciences

Abstract

The behavioural sciences are presented as a set of subjects oriented to the study of the activities of organisms. Institutional practices and their dimensions are characterised. A lack of institutionality in investigative practice is identified. There are some consequences in the case of behavioural sciences.

Presentation

Behavioural sciences encompass a set of subjects interested in the activities of organisms, among them are ethnology, ethology, psychology, anthropology, linguistics, economics, among others. These all meet up, at least in contemporaneity, in the systematic observation, registration and experimentation on behaviour as a preferred source of solving the questions of their respective subjects and generate knowledge. Likewise, although no one can claim unidirectionally to the behaviour as their identity or exclusive object of study or agree to subsume their interests to a neighboring discipline (Kantor, 1978); in recent years its grouped name has been proposed to facilitate active collaboration and improve its reputation before society by "evicting" anti- or pseudoscientific praxis (Gintis, 2007).



The concept of institutionality refers to the configuration of inter-individual relations between members of a society in favour of the achievement of a shared goal. Exchanges between individuals have at least two dimensions. The personal dimension, where the ways in which to carry out the activities (when, where, how) are not limited and the differentiation of the individual throughout their various communities (transcommunal) becomes relevant through biographical identity. No two people are the same. For its part, the impersonal dimension refers to those aspects where the functions of the individual are highly delimited by patterns previously established by the institution. Generally, this dimension is indicated with the organisational positions that people occupy, such as boss, worker, citizen, captain, president; and its denomination shall obey the duties and rights that the individual in that position is expected to fulfill.

In a continuous observation of interindividual practices, both dimensions coexist, and their discrimination is carried out on strictly analytical grounds. An individual presents a name with which to identify throughout their life, nicknames, or diminutives with which to bond in certain intimate relationships and assumes positions / roles to respect in specific spaces and times.

To better illustrate the concepts, we can present the case of a policeman who is dedicated to the arrest of criminals for their subsequent trial. When talking about him, we can eliminate the personal character and rather this denomination makes us interact with the interindividual relationships where institutional practice (impersonal) prevails over the names and qualities of the people involved. However, this is not incompatible to take into account the personal dimension of such a practice. Every institution is made up of people. Continuing with the example, a specific policeman (in addition to being a policeman) has a name and surname, and in some cases his personal characteristics can help the execution of his role in the institution. The fact that José Sánchez (to quote an arbitrary name), a police captain, is kind and good listens to complaints are undoubtedly good qualities that, although every police officer should have, are not formally included as an indispensable part for the fulfillment of the function of arresting criminals. Qualities that would also, surely, be destined by said person towards his relatives, friends, and acquaintances.

As far as the sustainability of institutions is concerned, the impersonal dimension becomes more relevant; since it is a prevention before the possibility that potential losses or departures of personalities prevent the practices, which define the entity, from disappearing (Avalos, Bernal, Ribes & Sánchez-Gatell, 2017). Institutions formalise their practices by scoring circumstantial or technical criteria that enter the lives of new members among duties.

In Peru, the lack of institutionality is a transversal problem in multiple aspects of life. Most citizens feel distrust for their institutions and express that the duties (such as paying taxes, services, complying with the law, among others) are not usually equitable with the rights that are offered to them (education, health, recreation, among others). In the same sense, researchers denounce orphanhood of institutions (scholarship policies, meritocracy, trained human resources, career line and / or creation of research centres), combined with a series of suffocating bureaucratic criteria that prevent them from dedicating themselves full-time to their vocation or having to alternate it with teaching. In this context, research depends on specific personalities with privileged economic and personal conditions, leaving the institutional character in the background and resembling more of a hobby or pastime (without duties or rights). In the case of personalities who do not count or can maintain such a lifestyle

for a long time, they tend to abandon their vocation to link themselves to the practice of professional care or another occupation subject to the supply-demand dynamics of the market.

In the specific case of the behavioural sciences, this dynamic has had unfavourable consequences. 1) Low scientific production: Peru ranks eighth in Latin America and 73rd in the world, representing 1.3% of production in the region and 0.05% worldwide (Mendoza-Chuctaya, Chachaima-Mar, Mejia, Mirano-Ortiz-de-Orue, Ramos, Calla-Torres & Huaraca Paricahua, 2021). Mejía & Alvarez (2018) have documented the low scientific productivity of the Peruvian behavioural movement. This could be linked to the lack of institutions in this same field that last over time (Benites, 2006). 2) The ancillary nature of research to professional demands. Most research in psychology could be described as the construction (or revision) of evaluation or intervention instruments in the professional field of health or education. Especially being carried out during the undergraduate stage by students with professional interests who will not return to carry out research or integrate into lines of knowledge production. Evidencing a lack of research career line differentiated from teaching education. The impersonal character is situated as a thesis advisor and a university student whose primary criterion is the achievement of a professional degree that allows them to practice (Gutiérrez, 2018). 3) The cult of leaders. The personal dimension is imposed in the research practice in behavioural sciences, making the proposal (valid, like all) of the privileged character become the norm with respect to other researchers. Whether intentionally or not, the lack of institutionalised resources forces even the most privileged of characters to eventually turn their proposal into moral criteria for their colleagues, opening a competition.

Institutional problems are preventing the development of sciences that are not usually present in Latin American countries. The collaboration of the behavioural sciences as a whole, at least, guild-differentiated within society could obtain better results in the creation of institutions that maintain research practice relatively independently of professional requirements, although maintaining as a motivating horizon the creation of more effective connections to solve the problems that afflict society.

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Forename(s), Surname(s) of the Speaker

Romina de los Angeles Rosciano Fantino

Title of the presentation: Towards a methodology with a gender perspective in research in the field of visual arts in Argentina

Abstract

In my doctoral thesis I seek to investigate the causes why the field of visual arts in Tucumán has a strong tradition in artistic production in the country, forming a reference in its region. On the other hand, this research is initiated in a globalised context, in which feminist cultural studies have caused profound transformations in all fields of human production, therefore it is essential to address scientific research with a gender perspective. The present work will seek to expose some innovative methodological tools, planned from a gender approach in scientific research, taking as a case the productions of women artists of the Tucuman environment.

Introduction

It is firstly necessary to point out that the methodological aspect around the analysis of this topic represents a particular difficulty. On the one hand, the specificity of the language of the object "work of art" of the visual arts is complex for scientific research, in which methodological tools seem to avoid an adequate approach to the categories of said object of study; on the other hand, feminist cultural studies propose new approaches to scientific analysis. For all this it is essential to review and problematise the way in which the object of art is approached, and it is appropriate in the present context to incorporate methodological tools that consider the sex-gender perspective.

The work plan that I will carry out covers the historical period between 1946 - the beginning of Peronism - until 2001 – the economic crisis that ended with the government of the Alliance - while seeking to identify the causes why the field of visual arts of Tucumán has the high degree of development, while paradoxically it presents profound limitations.

The province of Tucumán and its visual artistic field. Brief review and thesis presentation

Tucumán is a province of the Argentine Northwest, the one with the smallest geographical territory but the one that concentrates the largest population in the region, with a powerful tradition of folklore in its music and dances, a strong imprint of the Catholic Church in social practices, of intense cultural activity consolidated from the presence of the National University of Tucumán (UNT) during the first decades of the twentieth century, and characterised by the importance of the sugar industry and its high degree of unionisation. To analyse the field of visual arts in Tucumán is to talk about the Faculty of Arts of the UNT. Its role in the Region of the Argentine Northwest (NOA) is fundamental since artistic training is concentrated in this institution. It has had outstanding teachers such as Lineo E. Spilimbergo or Lajos Szalay, who represented "a differential mark of the art of the Tucumán people who followed them" and constituted the basic sediment for the different projections of art in the province (Terán, 2008). However, despite this profuse artistic production capable of competing on

international scales, the field has serious deficits in the distribution and consumption of its production and insertion into the market, so it is conditioned and subject to the focus of Capital Federal, with its consequent exclusion from the stories of *the history of Argentine art*.

The main hypothesis of the thesis states that the characteristics acquired from the field in question was marked by a cyclical dynamic of strong impulses and strong shocks in line with the drifts of national politics and the recurrent interruptions of the rule of law, with the consequent particularities of economic development.

Although the bibliography that accounts for the production in visual arts during this period is not extensive or specialised, subjected to an analysis with a sex-gender perspective, it shows some difficulties when elaborating a representative discourse of the visual artistic production of the region. A first problem could be stated from the question asked by Linda Nochlin in her article "Why haven't there been great women artists?"²⁷. It is a question that we could ask in all professional fields, because with known exceptions, the historical accounts that indicate milestones of each specific field, advances and significant contributions, have been made by men. In the case of the field of visual arts of Tucumán this formula is repeated and, again, with known exceptions, in the heritages of museums and relevant institutions there is most of the production made by male artists.

The question of numbers or quotas -which is already an index in itself-, could be attempted to correct *by including* in these accounts of an incipient history of the art of Tucumán women artists who were made invisible by that historical conjuncture. However, what gender analysis shows us is that it is perhaps more convenient not to rummage through these archives until we find some women artists, but to reflect and analyse the conditions of access to training, production, and circulation of works of art. In this way, the various ways in which the field of visual arts has acquired its current characteristics are more understandable, and likewise, it would allow us to identify if the construction of a macro-narrative of *the history of Argentine art* -in which we will seek either to inscribe the local production or to discuss with it- was determined by androcentric, logocentric, racist and classist biases.

Visual arts in a Latin American context, peripheral and in political tensions: towards the construction of a methodology with a sex-gender perspective

At first, it becomes essential to think about questions from a gender perspective that problematises the existing literature and that can also be applied to the elaboration of the subject of this research. The bibliography that studies the field of visual arts in the period of our interest highlights the aforementioned Spilimbergo and Szalay, as well as Lorenzo Domínguez, Víctor Rebuffo, Luis Lobo de la Vega, Roberto Fernández Larrinaga, Ramón Gómez Cornet, Carlos Alonso, Juan Bautista Gatti, Sixto Aurelio Salas, Dante Cipulli, Fued Amin, Ezequiel Linares, and some others, with few women like Mercedes Romero, Leonor Vassena or Susana Soro. Why are there a majority of male artists on this list? How was this sample prepared?

Among the elements that structure the field we must consider the institutions of training, production and distribution of works of art. In the preparation of this selection of artists, were the exhibitions

²⁷ Homonymous article published in Karen Cordero Reiman and Ina Sáenz (Comp.) (2001), *Feminist criticism in the theory and history of art*, Universidad Iberoamericana (CDMX), University Programme of Gender Studies of the UNAM, Conaculta-FoncaCurare.



held in public and private spaces, locally and nationally, considered? Did the criterion also include those who served as professors in the Faculty of Arts? In the event that some or all of these criteria have been applied for the preparation of the selection, were the conditions of access to training and sustaining artistic production for both men and women analysed, and the differences that their different experiences and possibilities enabled for each group?

On the other hand, the thesis proposes to analyse the causes of historical order that contributed to the configuration of this field. In this sense, it is important to take into account how the political, social and economic changes that took place in Argentina during the period analysed, and with distinguishable particularities in the province, affected the agents involved in the field of our study on a daily basis. Can differences be discerned in the ways in which these changes affected female artists and male artists? What were the immediate and long-term consequences, both in the performance of visual and working artists, and in the development of the field itself?

Conclusion

The proposal, in this phase of the research, aims to plan the future stages taking into account these questions. Likewise, these questions can operate as triggers for the elaboration of a new representative sample of artists from the province. In this sense, the transformation that took place in the mid-1980s and until today in terms of the presence and visibility of the production of women artists in the province is extremely visible: there is a gradual increase in participation in provincial and national salons, in prizes and competitions, a sustained and increasing presence of women teachers as well as in the area of management. For all this it is essential to make use of the methodological tools that bring the sex-gender perspective closer, in order to rethink the discourses of art history and elaborate truly original and contextualised reflections and contributions in the present conjuncture.

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Thematic Session 10: Learning and Teaching (I)

Forename(s), Surname(s) of the Speaker

Wanessa Do Bomfim Machado

Title of the presentation: Video Lessons in the (post-) pandemic times: an analysis of BioSciences professors’ professional identity throughout their social representations

Abstract

Emergency remote teaching due to COVID-19 Pandemic in 2020 challenged teachers to convert face-to-face classes to online teaching. This challenge is powered by the demand/expectation of having their classes recorded. Besides the technical novelty/difficulty, it also deals with self exposition and a new *modus operandi* straightly related to their teacher identity. Undergraduate and graduate professors of the Institute of Medical Biochemistry will be the subjects of this doctorate project. Understanding how this experience has been to the professors, through Theory of Social Representations as well through Cognitive Theory of Multimedia Learning may highlight questions related to teaching identity in (post)pandemic times and also foster the mapping of positive practices in videoclasses recording.

Introduction

Distance education (DL) and, more recently, emergency remote learning (ERE) have been demanding new competencies from the teacher, among them those specific to recording video lessons. In this case, there is a whole resignification of what is routinely done in the classroom. However, like the term coined by Hodges (2020), remote teaching was an emergency, and there was no time for proper planning, which translated into an even greater challenge for the teachers.

We should say that the challenge of recording video lessons is not only the use of techniques, but an asynchronous exposure, without student feedback, that is 'perpetuated'. It not only transforms the class, but also the subject recorded, transmuting him/her into a teacher-actor. Thus, a pressing issue deals with the professional identity of this teacher.

Identity is not restricted to the representation that a particular group makes of itself, but it extends to the representation of certain objects that are common and particular to them, differentiating themselves even from the exogroup (DECHAMPS; MOLINER, 2014, p. 142). Which social representations (SR), then, do professors from acting in remote teaching have of the video lesson? To what extent do these SR speak about their identity as professors in higher education today? Further, might faculty resistance to video recording be due to their rejection of the influence of a new social representation on their identity?

These questions are necessary for the understanding of teaching know-how, which, beyond the pandemic, will most likely reflect or even transform itself in relation to the "old normal".

Social Representations and Teaching Identity

Between 2015 and 2018, we investigated the SR of video lessons by teachers at the Cecierj Foundation, responsible for DL in Rio de Janeiro, Brazil. We wanted to understand and circumvent the resistance that professors had to the recording, since only 10% of the target audience performed the project's video lessons.

Duveen & Lloyd (2001, p. 269) conceptualize "resistance" as the way in which an individual refuses to accept the influence of a new social representation on his or her identity. Whereas for Dechamps and Moliner (2014, p. 142) the specificity of the 'we' is not only expressed through the characteristics that the group attributes to itself [...] It can also be expressed in the way in which this group represents to itself a social object.

Thus, we wondered if the lack of interest could be a resistance to the influence of the new identity representations [of DL professor] that are contained in the social representation of the video lesson? According to Moscovici (2015), founder of the Theory of Social Representation (RS), the fear of the strange must be fought and what is unfamiliar passes through the SR constructed by the group to be familiar. Considering, initially, that teaching classes is a common and familiar activity in the teacher's daily life, we concluded that the "strange" is the recording.

The camera, beyond the lesson, also transforms the recorded subject, "in a process of migration from a well-known language - that of the face-to-face classroom - to another language, of which they have always been spectators, and not protagonists - the audiovisual one" (Gerbase, 2006). Moreover, especially during the ERT, the teacher is not only responsible for the content and presentation, but often is also for recording, editing, and uploading the video lesson. Stepping out of the traditional role and still risking having their image eternized seems to impose a threat to their teaching identity.

According to Breakwell, founder of Identity Process Theory (IPT), "individual responses to social representations are linked to the ways in which they may threaten or secure the identity principles."



(Breakwell, 2015:281) These four principles, sense of high self-esteem, self-efficacy, positive distinctiveness, and continuity, serve as a guide for identity construction and maintenance, as well as coping strategies in the face of adverse situations.

In this way, although we can characterise the video lesson as a phenomenon of social representation, the strangeness there would continue to manifest itself (and frightening) in the face of imminent recording.

Given the scope of the master's project, we did not delve into the above question. But we prepared the ground for this investigation.

A sign at the entrance of the Institute of Medical Biochemistry, the place where the subjects of the new research are affiliated, contains the following quote by Chagas Filho: "at the university one teaches because one does research". We may wonder if the class, beyond its recording, would be perceived as strange in the situation. But isn't teaching a class something already familiar to the professor? We agree with Chagas Filho that the classroom is not his/her natural environment, but the laboratory. When the speech is eternalized, he/she makes a commitment to what is said that does not exist in the classroom. If there is insecurity in the classroom, the professor can reinvent him/herself, constructing and deconstructing truths as in the laboratory. In the video lesson, however, the insecurity is heightened, since the students' feedback is not given in real time. Thus, considering aspects of pedagogy, didactics, and neurocognition becomes even more pressing.

Many brick and mortar professors may consider these aspects. But we cannot ignore that these professors, in general, unlike teachers at the basic level, do not have a pedagogical training. In a face-to-face class, even those who only dictate the content can be considered good professors. But in a video lesson, besides didactics, there are also aesthetic and technical issues and the situation changes. We also believe that there is correspondence between the social object (the video lesson) and his/her identity as a remote teaching professor.

If we observe the cognitions raised by CEDERJ professors in relation to the video lesson we will have: practicality, interaction, teaching, dynamism, objectivity, content, technology, preparation, modernity, internet, etc. (Machado, 2018). Some of these factors are directly related to the new skills needed by this new professor.

In this way, we can affirm that very possibly yes, the SR that professors have on video lessons do speak indirectly of their identity representations, as DL professors. Moreover, we believe that remote teaching, and more specifically video lesson recording, represents a threat to the teaching identity as it has been traditionally established.

Thesis Design and Possible Developments

Our subjects are a representative group of professors from a HEI, the 66 professors affiliated to the Institute of Medical Biochemistry of the Federal University of Rio de Janeiro (UFRJ). These professors teach in different courses belonging to the Health Sciences Center. The choice for the health area is due to the visual and abstract approach of this area. These characteristics are extremely favourable for the use of video lessons by professors.

Through content analysis, prototypical and similarity analysis of the answers to a questionnaire using the free evocation of words technique, closed and open questions, we intend not to limit ourselves to making a portrait of the professor and more specifically of the video lesson during remote teaching,

but that it may contribute to 1. to improve public policies regarding the (continued) teaching training; 2. to promote, through the dissemination of good practices, that the production of video lessons be, at the same time, more effective didactically, aesthetically pleasing, and more easily achievable from the professors' point of view.

We will analyse and scale the video lessons based on the Cognitive Theory of Multimedia Learning, which seeks greater effectiveness in multimedia instructional resources through its principles. (Mayer, 2020)

But these changes were not regional. The COVID-19 Pandemic affected the entire world and educators everywhere had to adapt, or, to use an expression from Breakwell, employ coping strategies to protect or adapt their identities. An interesting outcome of this research would be the possibility of comparing good practices in professor preparation and video lesson production carried out in different countries. Indeed, this PHD student is planning on doing it through a sandwich scholarship and, of course, it would be great to have partners all over the world in a multicentric study.

Finally, our research seeks to contribute to expand the knowledge in the area of teacher identity by articulating it with the SR of a specific technology - the video lesson and may foster dialogue between different networks that address the TSR and the IPT.

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Forename(s), Surname(s) of the Speaker

Otto Henrique Silva Ferreira

Title of the presentation: Proposal of Constituent Elements of Transdisciplinarity in English Language and Musical Language activities

Abstract

Currently in Brazil, some teachers-researchers have been thinking of the teaching of English as part of a process of critical linguistic education in childhood. They relate this concept to culture, identity, and meaning making. The variety of teachers and children in society pave the way for different approaches for teaching and learning. This work aims at presenting a proposal of elements which we suggest that constitute transdisciplinarity in activities organised in a didactic sequence prepared to teach English and Musical language. Our main objective is collaborating to teachers' practices in our country. Through a theoretical framework gathered during postgraduate studies and researches, we establish connections that may allow us to classify the activities as transdisciplinary.

Introduction

As Brazilian researchers, we think of the field of applied linguistic (AL) as a space for development and constant changes, that aim at comprehending the world as it is, with its different social voices and discourses (ARCHANJO, 2011). Different points of view regarding language and education result in relations that can be discussed by teachers and teachers-researchers, in order to promote new ways of looking at issues related to language and human relations. We understand that the process of recurring to knowledge from different areas with the goal of solving problems, not only in the classroom, but also in society, can be named as a transdisciplinary approach for teaching (FERRAZ, 2018).

When we look at our work as English teachers, we understand that our objective goes beyond studying and trying to understand those processes, as we seek to identify musical (MED, 1996) and English language elements, assuming that, when we interact by using a textual genre as contemporary pop song (AMMER, 2004; LENKA, 2009), they collaborate to open space to a transdisciplinary approach, which can be represented by other constituent elements.

This presentation is part of a doctoral research being developed in Brazil, at a university in the north of the state of Parana. It was conducted in collaboration with a supervisor, in accordance with the laws corresponding to ethics in our country and within the university.

Our research was divided in three parts. First, we had to prepare ourselves to the process of understanding the genre we chose – contemporary pop song (CPS), so we could develop our didactic material – a didactic sequence (DS) (DOLZ; NOVERRAZ; SCHNEUJWLY, 2011) to teach English as a second language to children (a 4th grade group of 6 students) (TONELLI, 2012). Then, we applied the activities, aiming at developing students' language capacities (LC) (DOLZ; PASQUIER; BRONCKART, 1993) for producing their own CPS. Finally, we analysed interactions recorded during 27 classes in which the DS was applied, trying to find elements that could be pointed out as constituents of transdisciplinarity in our activities, based on Ferraz (2018), considering LC and their textual productions to assess their learning. The last part is the one that we will be focusing here, in this presentation.

Main section

According to Bakhtin (2003), all different fields and areas that involve human actions and activities, depend on language. As we have got different moments and situations in which we are supposed to act, the use of language is instable, depending on our choices. The organisation and utilization of different structures, based on Bakhtin (2003), leads us to the concept of utterance. Although the

instability cannot be ignored, the author suggests that there are some consistent types of utterances, which can be called textual genres.

Dolz, Noverraz and Schneuwly (2011) bring up the concept of textual genre as a mega-instrument, as it can help us in the process of expressing ourselves by organizing many different semiotic linguistic and paralinguistic systems. It is important to emphasise that new genres can always emerge to be used in new contexts according to the needs of society.

Regarding musical textual genres, we understand that these kinds of texts will allow different interpretations to their listeners, but each one of the composers, when writing/producing their song, will be defining a function to it. So, in both parts of the communication process, there will be someone identifying meaning on what is being sang, and played, as it happens between human beings, constituted by their own ideas according to their experiences (BRONCKART, 2003).

The person who is in the position of listener will be able to identify itself with the song, considering the musical elements and the idiom that is being utilized by the singer to communicate. These elements can be appreciated, or not, according to personal references and experiences that will be making a person's musical preference. Based on Med (1996), we understand that music does not need words to communicate, but, when we refer to a song, we assume that both languages will be building the meaning of the song. So, our students must consider their public when we had to choose the kind of music we were going to compose.

About this process of defining the genre and understanding its function, we decided to relate the work in the activities of the DS to a final project, in which students would be able to identify the result of their efforts to learn English and musical language and act in a positive way, collaborating to society. They chose to direct the message of their song to children affected by cancer that were being assisted by a non-governmental organisation, using the CPS to tell them that they need to be brave, because they will overcome the disease.

After our students finished the CPS and we presented it to the children attended by the non-governmental organisation, we realised that they were able to produce the song according to the genre model we had. Comparing their first productions to the final version of their CPS, we could identify the development of their LC and their knowledge on elements that compose music and English. From that moment on, we focused on understanding the elements that could represent transdisciplinary relations established during the interactions in our classes.

After finishing the process of transcribing all the interactions that happened during the 27 classes, we had the opportunity to see that students were able to consider the context to judge a song's function and identify if it was appropriated to sing it in that moment, or not. We decided to call this capacity analysing the text and the function of the song and relating it to the context *constituent element of transdisciplinarity 1* (CET1).

The students were also able to identify and point out the relationship between knowledge from different sources and languages that predominate in the textual genre. We refer to this capacity as CET2.

As the CPS was composed by a group of students, it was necessary to keep talking about the objective and return to the ideas established in the beginning, so all children would be acting with the same purpose. The students were able to organize their participation in the CPS considering the importance



of the group for the mobilization and the choice of each one of the elements, and this capacity was called CET3.

The characteristics of the CPS demanded that the students knew how to play with different intensities and speeds, to make the necessary choices according to the function of their song. They were able to make changes in positioning and dynamics in relation to the characteristics of the genre, mobilizing not only English language grammar structure elements and vocabulary, but also musical language elements. This capacity was called CET4.

We understand that a transdisciplinary proposal must be focused on solving a problem, so, when we decided to teach English as a second language and music by working with this approach, it was fundamental that our students would understand and be engaged on the final project. They were engaged on understanding the communication problem and acting for the resolution through their CPS, and we called this capacity CET5.

According to our perceptions, each one of the elements could help us to understand how transdisciplinarity was present in our teaching practice when we organised the activities in a DS using a musical textual genre to teach a second language to children.

Conclusion

Our research can collaborate to the development of didactic materials and the analysis of activities. We identified 5 CET that we believe may help other teachers/researchers around the world to understand how to work with a musical textual genre to teach a second language and classify transdisciplinary practices.

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Forename(s), Surname(s) of the Speaker

James Manuel Pérez Morón

Title of the presentation: Virtual Experiential Learning (AEV) in LAC Business Schools: Case Studies and Best Practices.

Abstract: The AEV is a more sustainable, responsible, and inclusive internationalisation opportunity at home for LAC, a region with the lowest percentage of students with international mobility globally. We reviewed the literature in WOS and Scopus in 2010-2021 and used Biblioshiny (R-based statistical software) and VOSViewer. This study provides evidence of the intercultural competencies acquired and is a pioneer in addressing the ENS in LAC business schools as a strategy to achieve the Sustainable Development Goals-SDGs.

The speaker has not submitted a presentation for the purposes of this publication.

Forename(s), Surname(s) of the Speaker

Jennifer Andrea Venegas Espinoza

Title of the presentation: Design of inclusive educational resources with a gender perspective elaborated under a logic of international collaborative work²⁸.

Abstract

From the CIDSTEM-PUCV, the educational resources of the Experiment Programme of the Siemens Stiftung Foundation were adapted to a combined teaching-learning format, considering the conditions of distance education during the health emergency scenario caused by the SARS-CoV-2 virus. The resources were developed incorporating the gender perspective, the inclusive approach, and aspects of our Latin American identity. The work was carried out collaboratively with specialists from different Latin American countries. Given the current scenario of global challenges, collaborative work between countries allows us to rescue strategies and solutions with a territorial seal, relieving our knowledge and putting it at the service of educational resources relevant to each context.²⁹

²⁸ Authors: Jennifer Venegas-Espinoza and Nina Ibaceta Guerra.

²⁹ CIDSTEM-PUCV: Center for Research in Didactics of Sciences and STEM Education-Pontificia Universidad Católica de Valparaíso, Chile.

Introduction

The purpose of the project was to adapt the educational resources of the Siemens Stiftung Foundation's Experiment Programme to a blended learning format (Horn and Staker, 2015) that incorporates activities with an inclusive education approach, with a gender perspective and that recover and value aspects of our Latin American identity.

Experimento is a STEM education programme, conceived as an opportunity to contribute to the innovation of teaching and learning in the classroom. However, the original format showed some limitations for its implementation in the context of distance education in Latin America. Consequently, this adaptation focuses on equalising learning opportunities for each student, recognising that problems in access to education, a product of contingency, have particularly impacted certain groups in our society (Garrido, 2020).

The central elements for the approach of this project are based on an exhaustive exploration process carried out with teachers from different Latin American countries, through the application of a diagnostic questionnaire about the teaching of science in the context of the pandemic.

This project was carried out through the formation of a multidisciplinary work team in which each professional contributed from their experience and knowledge in the construction of a referential framework of adaptation and elaboration of educational resources that incorporated the following guiding principles: vision of science as a human activity, carried out by people, through different procedures, that it constitutes itself as a dynamic body of knowledge, susceptible to changes in the face of new evidence, and influenced by the political, social and cultural context in which it develops (Latour, 2001; Ziman, 2003); value of diversity as an inherent attribute of all people and the places where they live, develop and interact; principle of inclusion, as a search for the recognition of the value of diversity and to generate the conditions within the environment that favour the full presence, participation, learning and development of all (Booth and Ainscow, 2015); accessibility, understood as the generation of conditions to promote the active participation of all people (Fevas, 2018); and gender perspective, as a way to survey all life experiences. Gender gives subjects certain attributes that delimit what is meant by being a man and by being a woman, which reproduces logics that do not always contribute to empower each person participating in the different spaces of education; this has been able to influence STEM areas, where an underrepresentation of women is observed (Avolio et al., 2020). By assuming this gender perspective, we seek to make visible and problematise regarding inequalities, gaps and inequities and from there to attend to each group according to their particularities, since it is recognised that children and other gender expressions have the same learning potential, regardless of their biological differences.

Project stages

The project had several stages, all of them articulated with each other, which made it possible to develop the educational resources in a sequential, collaborative and recursive way (see image 1), allowing the constant feedback of the proposed activities.

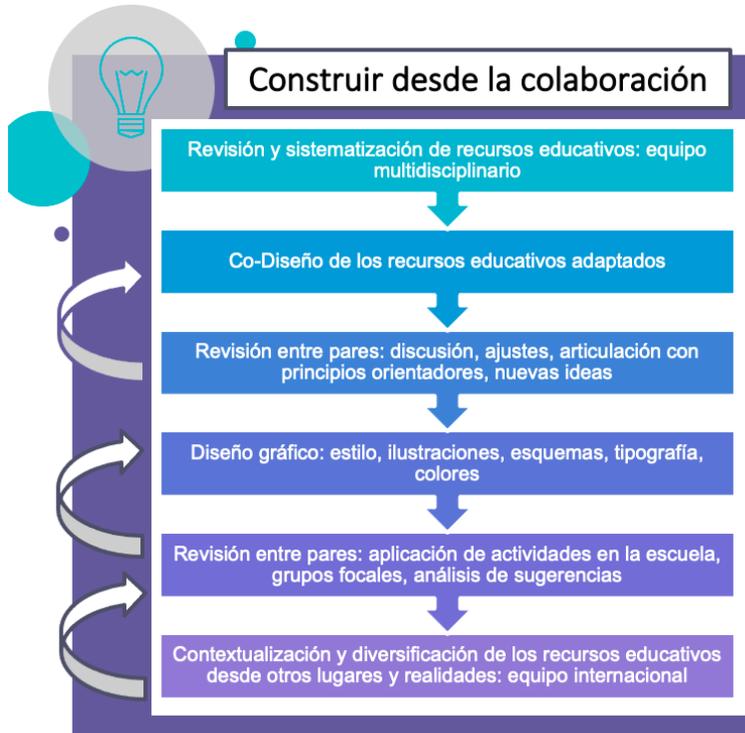


Image 1. Working model for the co-design and adaptation of educational resources. Blended Experiment Project. Source: Own elaboration.

Phase 1 "Preliminary review and selection of activities"

The content of the Experiment Programme was analysed and in correspondence with the results of the diagnostic questionnaire and the feasibility of adapting the proposed activities, 35 educational resources were selected to be adapted to the combined teaching and learning format. Specifically, for this communication the experience of the process experienced in the adaptation of the activities corresponding to the Experiment 8+ Programme is described, for students from 8 to 12 years old.

Phase 2 "Adaptation and collaborative co-design of educational resources"

The first stage of work of a local nature, was developed by a group of professionals who worked in an articulated and collaborative way. A teacher of differential education, in charge of the inclusion area, participated; a biology teacher and PhD in gender studies, in charge of gender mainstreaming; a science teacher, specialist in the development and editing of educational resources; an educational psychologist, in charge of shaping teacher communities; a primary school teacher with a background in scientific inquiry; a chemistry teacher; a primary school teacher with a major in geography; a pre-school teacher; a physics teacher; and a biology teacher with PhD in science, in charge of the general coordination of the project.

The second stage of work of an international nature, aimed to diversify activities and contextualise the reality of other Latin American countries. A total of 7 working days were carried out in which teachers

from Colombia, Ecuador, Peru and Chile participated, elaborating 30 files with activities contextualised to each territory (see figure 2).

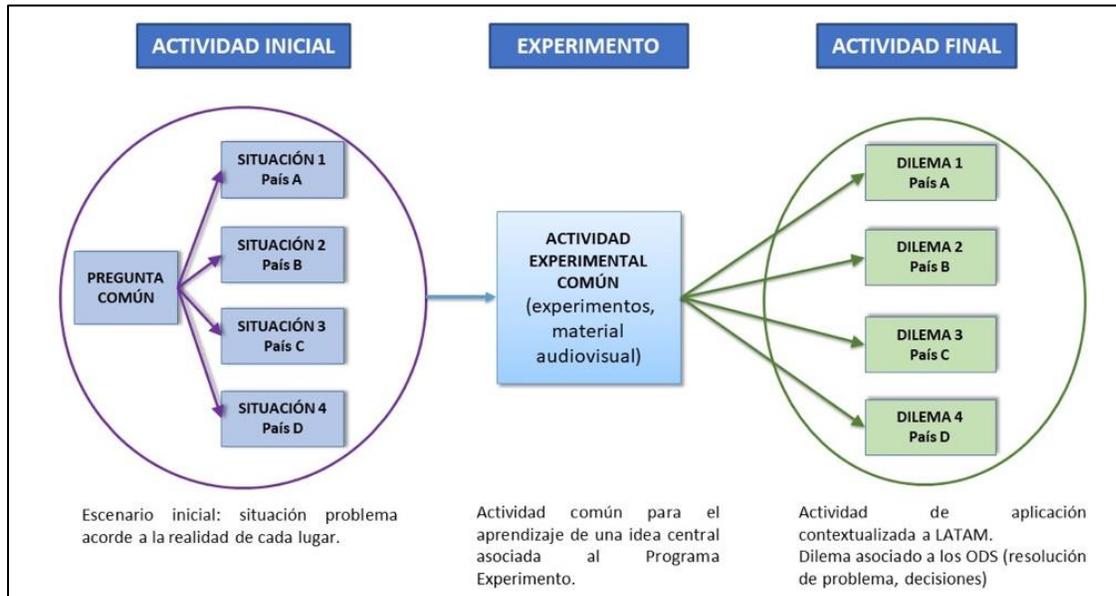


Image 2. Model of diversification of activities at the international level. Source: Own elaboration, CIDSTEM.

Phase 3 "Piloting and evaluation"

Throughout the period of execution of the project, and as the activities were developed and adapted, these were applied by the teaching team with students of different ages. This made it possible to sustain a constant evaluation process for the improvement of the proposed activities.

Characteristics of educational resources

The adaptation of the Experiment 8+ Programme included the adaptation of 11 activities organised into three sets of resources: Our food and health; Energy in Latin America; and Recycling.

The design of the activities considers 3 moments in which the students are challenged to solve a problem close to their reality. In this way, at the beginning of each guide a question is presented that addresses the proposed scientific content, contextualised to a local problem. Then an experimental activity is presented, with easily accessible materials, in which students are invited to propose ideas that solve the problem. Finally, there is an activity called "Your opinion is requested" where local initiatives are presented that seek to provide relevant solutions to the problems studied. The objective is to challenge students to take part in these decisions from their next reality.

In addition, these educational resources are accompanied by the image of Latin American scientists, who develop their research on topics relevant to those incorporated. Illustrations based on these and messages are included whose objective is to interact with the student body and promote a vision of science that recovers the experience of our territories.

Conclusions

The project highlights collaborative, interdisciplinary and international work as a success when undertaking creative solutions in diverse and changing contexts. Non-hierarchical collaboration is conceived as the model of activity that conforms to the ideals of equity, development and sustainability of the twenty-first century.

Given the current scenario of global challenges, collaborative work between countries allows us to rescue strategies and solutions with a territorial seal, relieving our knowledge and putting it at the service of educational resources relevant to each context.

The experience presented here constitutes a working model that could contribute to the generation of spaces for dialogue between countries, not only in Latin America, but for cooperation with the Caribbean and the European Union. From these instances of collaboration, possibilities are opened for the search for common aspects and the implementation of articulated solutions to shared problems, in fields such as education.

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Forename(s), Surname(s) of the Speaker

Pedro Murilo Gonçalves de Freitas

Title of the presentation: Developing international alternatives of hands-on learning in Brazilian higher education: topics for a Portuguese handbook of project in architectural heritage

Abstract

This work presents an ongoing experimental discipline in conservation of Portuguese-Brazilian architectural heritage at the Architecture and Urbanism undergraduation course of Federal University of Sergipe, Brazil, with the support of UNESCO Chair “Heritage, Cities and Landscapes. Sustainable Management, Conservation, Planning and Design”, hosted at the Faculty of Architecture of University



of Porto, Portugal. It aims to demonstrate that internationalisation of higher education when combined with hands-on learning methods can be used as a tool for improving training of architects in designing architectural conservation. The experience is being used as a case study for a future handbook in Portuguese of combined project methods in architectural heritage between Portugal and Brazil.

Introduction

In the last couple decades, conservation of architecture has become more and more required. The theme of the decay of modern buildings and the acknowledgement of sustainability concepts in the 21st century have increased the visibility of methods conceived in the Restoration field many years before. International recommendations and manuals alerting the need to preserve historical constructions and other places of cultural significance became a new area of study of scholars and students (JOKILEHTO, 2007). However, on a professional level, proved by several examples in historical cities, the *tabula rasa*³⁰ method has never been completely substituted and the recognition of existing structures to produce or transform old buildings into new architecture is still a misunderstood procedure, resulting in low quality works lacking scientific justifications (PETZET, 2004).

In Brazil, despite the specialisation courses in Restoration of Monuments dating back to 1970s in some main public universities, they have made little impact on Brazilian architectural higher education. Buildings with historical significance require to be handle with different project approaches, at least different from the professional habit of intentional destruction before any new architectural creation. Surveys, careful documentation analysis and material investigation, always in contact with direct information from the field, are recommended procedures before the intervention itself, resulting in complex research of a given historical building and in an even more difficult decision of how to preserve it for future generations (TIRELLO; FREITAS, 2017).

It is just by 1994 that Conservation was required to be integrated into Brazilian Architecture and Urbanism undergraduation curricula. However, since then, there has been no agreement on how to structure teaching syllabus, curricula adaptation and interdisciplinarity. Restoration as a special type of conservation project conducted on heritage buildings remains controversial or just underused. Some traditional courses rely on theoretical approaches, accompanying the history of Italian Restoration theories with Brazilian contradictory cases to qualify critical views (FREITAS; TIRELLO, 2016). However, because of that, practical experiences in higher education – such as hand-on learning and active methodologies of project development teaching – are still a pedagogical topic with a severe lack of innovation.

Some hands-on conservation project experiences in AU-UFS

Federal University of Sergipe's Architecture and Urbanism undergraduation course (AU-UFS) approach on conservation is one special example. The course was created alongside with the other undergraduation courses of Archaeology, Museology, Theater and Dance, an idea sparked by Brazilian

³⁰ Latin expression with several different uses that, in Architecture, helps to describe a contemporary project method based on destroying everything in each place to construct a new building.



“Programma Monumenta” experience in Laranjeiras, Sergipe, at the end of 2000s. In agreement with the Brazilian national heritage institution³¹, the University planned an “art campus” based on heritage manifestations in the historical city, whilst making possible the restoration of old sugar cane granaries in the city center, one of its most remarkable ruins (NERY; BAETA, 2012). Classified as national heritage, Laranjeiras is an 18th century city in the Cotinguiba river basin that was economically important because of nearby sugar plantations. The city still preserves picturesque ruins of buildings made with traditional Portuguese colonial typology.

Despite the good intentions at the time, the plan was never fully finished, and there were problems in the campus’ buildings renovation, especially in the management of worksite contractors (COSTA, 2013). Without respecting the restoration project, most ruins were reconstructed, creating historical fiction. In addition, courses curricula were never completely adapted to Laranjeiras cultural heritage due to how the first group of professors were hired in the early 2010s. As a result, the population has never fully recognised the campus as beneficial investment for the city (BRENDLE, 2017).

At the moment, the collegiate body of Architecture and Urbanism is still discussing if the course syllabus is inefficient, confirmed by recent student evasion data (FEITOSA, 2016). Furthermore, new professors of History of Architecture denounced the lack of correspondence between the campus – as a preservation driven idea – and its planned function of constituting an historical and significant environment for the student to experience.

So, as a young cultural heritage professor analysing critically these discussions regarding the own campus “identity”, since 2018 we have tried to develop new experiences based on elective disciplines or courses open to the public (*extensão*). When possible, joint classes with interested professors from Archaeology course were planned to introduce to future architects (and archaeologists) the need of new approaches on heritage subjects using building archaeology methods (FERREIRA; FREITAS, 2020). Primary evaluations of these experiences concluded that, in general, due to curriculum flaws in Drawing, students have low stimuli in architectural documentation production, such as, the description of ancient construction, the recognition of building’s chronologies and the accuracy of surveying with traditional and digital methods (FREITAS, 2019).

In 2020, however, the COVID-19 pandemic undermined the impact of these experiences on campus. It was also observed that, in some universities, the pandemic even reinforced theoretical conservation training approaches due to social distance and online education continuity during global health emergency. The lack of updated architectural conservation manuals in Portuguese also became clear: online references are predominantly written in Italian and sometimes very case-specific – or region-specific –, making it difficult for students to understand and then pursue better (online) conservation project development training in vernacular Brazilian architecture examples.

Internationalisation as a tool for learning improvement and cooperation

In 2022, as soon as became possible teaching in presence, new strategies were developed to review some negative aspects of the pandemic in Brazilian higher education and better acknowledge the positive changes created by popularization of online education due to COVID-19. As a tool for learning improvement and regain confidence in hands-on activities as a “recover-redesign” strategy (UNESCO

³¹ IPHAN – Instituto do Patrimônio Histórico e Artístico Nacional, founded in 1937.



IESALC, 2021), internationalisation of our “heritage disciplines” in AU-UFS course could be a way to align training methods to a broader perspective, seeking assistance of international peers in EU with little effort.

Thus, in the current semester, a new elective discipline was designed called “Restoration Laboratory: documentation and project” at the AU-UFS course with the support of UNESCO Chair “Heritage, Cities and Landscapes. Sustainable Management, Conservation, Planning and Design”, hosted at the Faculty of Architecture of University of Porto, Portugal, and coordinated by Professor Teresa Cunha Ferreira since 2019. The discipline is the result of a coordinated networking effort carried out in 2021 and proved to be very useful for realizing common problems and interests.

Currently ongoing with 15 students, the discipline syllabus was tailored aiming to apply on site three fundamental phases of study in any historical building: i) architectural survey, ii) decay analysis, and iii) conservation project development (MUSSO, 2004). For onsite experiences, an 18th century chapel inside an old sugar plantation in the neighbour city of Santo Amaro das Brotas was made available. The object, a national heritage building since the 1940s³², is also an important Portuguese heritage due to traditional building connections to Portuguese vernacular architecture during colonial period.

With funding obtained through an internal university call for worksite activities³³, the participation of professors from UNESCO Chair was planned as invited lecturers, triggering the interest of students for the development of tasks that would be evaluated by experienced scholars into a new EU-LAC network. It's important to say that the idea is not based on mobility of students or professors but prioritize their involvement “at home” (DE WIT; ALTBACH, 2021), that is, into regional work plans with a view to produce an international publication as a platform for further discussions and projects, in specific, a Portuguese handbook in Architectural Heritage.

Topics addressed in the discipline are: i) architectural survey; i.1) building recognition; i.2) measurement tools; i.3) traditional survey; i.4) digital instruments; i.5) applied photogrammetry; i.6) data acquisition and drawing; ii) decaying analysis; ii.1) materials composition; ii.2) construction analysis; ii.3) decay glossary; ii.4) decay mapping; ii.5) conservation recommendations; iii) conservation project development; iii.1) previous interventions analysis; iii.2) community use investigation; iii.3) new buildings proposal; iii.4) future preservation strategy proposal.

Some recent conclusions

For the AU-UFS course, internationalisation is being very positive so far, due to the possibility to exchange, organize methods and produce, especially regarding course difficult identity and previous unfinished experiences. For the UNESCO Chair, there are several new prospects: the possibility to reframe their own views about Brazilian-Portuguese heritage, the idea to propose and critically test

³² Classification (“Tombamento”) by IPHAN in 14 jan. 1944: Fine Arts Book inscription n. 299-A; History Book inscription n. 232.

³³ Part of planned onsite activities were funded by the Coordination of International Relations (CORI), also providing a 3-month scholarship to one Architecture and Urbanism undergraduate as a student monitor. Architect and Professor from the Federal University of Bahia Viviane Oliveira was also invited for the discussion of study plans, onsite activities, and project orientation, creating a technical and pedagogical discipline board.



updated methodologies of architecture conservation and the opportunity to engage with other professionals in Latin America.

As an ongoing discipline, further studies should be made to verify adaptations in the educational process, students' response on proposed tasks and confirmation of this pedagogical alternative as beneficial for students' curriculum. So far, the expectations are very high, since the idea is beneficial for institution reputation and contributes to Brazilian architectural conservation research in practical terms.

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Thematic Session 11: Learning and Teaching (II)

Forename(s), Surname(s) of the Speaker

Ana Milena Morales Sossa

Title of the presentation: Educational modes and Higher Education: Towards the construction of a didactic conception

Education in Colombia is represented by the academic offer in educational modalities that are: Face-to-face, distance and virtual. These modes do not fully adjust to the needs of the population due to different aspects such as distance, time, money, adaptation from one mode to another, etc. and the study plans are fixed, leaving the student with very few options when choosing what to study and where to do it.

At the same time, it is important to mention that there is a new name for young people who neither study nor work, they are called NEET (NINI in Spanish). This concept began in Mexico in 2000 and, due to its characteristics, quickly spread throughout Latin America. According to a study carried out in Colombia, Mexico and Uruguay in 2017 by Navarrete, Innamorato and Silva (2017), in Latin America educational coverage has grown and today most young people actively participate in school; however, there are still social and cultural inequalities that do not allow school attendance to be continuous and egalitarian for the entire population. According to the study, 13% of young Colombians between 20 and 24 years old drop out of school, having started at least university.

Given this panorama, education is the vehicle to close the inequality gap if it is taken into account that about 150 million people between 15 and 29 years old in the world could be left in this condition of NINI. Traditional universities must adjust and adapt to this new environment with more flexible and regular models.

Theoretical framework

Education in Colombia has been characterised by the offer of face-to-face academic programmes, as evidenced by the National Information System of Higher Education SNIES 2020, which shows that, of a total of 6950 academic programmes in the country, 90% correspond to face-to-face training, 6% to virtual programmes and 4% to distance programmes. Among the characteristics of the face-to-face mode are that it is a socialising space where the actors that make it up can interact, where elements are achieved for the formation of identity, social and individual habits, among others. It is a scenario where immediate communication is achieved due to its characteristic of synchrony between time and space. In this scenario, according to LeFebvre and Allen (2014), the work of the teacher prevails in cognitive processes and includes fundamental aspects such as: body language, body contact, intonation, among other aspects that affect student learning.

Considering this scenario, another option has emerged, to study regardless of the synchrony of distance and time, and this is the mode of distance learning. In Colombia, distance learning has emerged as a solution to the difficulties that many students face daily: geographical isolation, the cost



of travelling from one place to another, the need to work and study at the same time, among others. The National Open and Distance University is an institution of Higher Education specialised in this academic mode.

With the emergence of digital convergences, which have positioned themselves in various spheres of human life and have achieved the spatio-temporal subversion that has been present for decades, various scenarios of people have been altered, especially conventional learning environments, the roles of teachers and students within the educational system and the materials used in pedagogical mediation, among others. This is how the virtual mode arises. In Colombia, this mode has been considered as a real option of quality and access to a large part of the Colombian population. Forero (2019) indicates that the university must rethink itself in all its areas and in its organisational dynamics: teaching, research, extension, innovation, internationalisation, among others, and emphasises the implementation of new academic programmes that respond to rapid social changes, where the use of electronic devices by the community for educational purposes is also encouraged.

Whatever the educational mode used today in Colombia, there is a gap between the current digital reality and the reality of the curricula available in the country. We have moved from paper to metaverse, but some institutions still have very old educational structures that do not measure up to the needs of twenty-first century students.

Indeed, the young population of the country suffers from a difficult social problem that does not allow young people to develop a life project and among these difficulties is access to higher education. The NINI population in Colombia exceeds 30%. In addition to the social inequality, lack of opportunities and lack of opportunities that characterise young people, the historical moment that humanity is experiencing with the so-called fourth revolution stands out. According to Bosco (1995), it began on 24 May 1844, when Samuel Morse sent the first telegraphic message. This event revolutionised the way information is transported, and the way people live. Later, the telephone, radio, television, etc. opened the way to digitisation, which facilitates the interactivity, processing and manipulation of information.

When analysing this problem, the question arises of what kind of education is promoted. In this regard, UNESCO (2019) affirms that it is not only access to education that the governments of the countries should seek, but that this education must be of quality, for all inhabitants and throughout life.

Through a historical exploration, it is intended to know how a didactic conception is based. Likewise, the history of the concept of curricular flexibility and multimodality, which are the most important references of this study, will be constructed. The objective is to see the curriculum not as an instrument of the classroom but as a facilitator where culture, government policies and above all the life project of the students are integrated. It is expected that the student can choose which mode to select within the university offer, and that it can accommodate the individual condition of each one, according to their needs.

Methodology

This project focuses on proposing a flexible curriculum in a higher education based on multimodality using PRACCIS. Hermeneutic research involves a translation process, as stated by Gozález (2006), what is translated is the scientific language into everyday language or aesthetic language and this is done through PRACCIS. This process, as Duque (2019) calls it, involves prejudices, reflection, analysis,



comparison, understanding, interpretation, and synthesis. It is part of a hermeneutic process, according to González (2011:125) "The hermeneutic experience translates an experience to carry out a research process that involves the formation of the being". Being a unique and unrepeatable experience, it is expected that there will be an individual transformation of the researcher, but at the same time, that there will be a social repercussion where this proposal has an echo and transcends higher education scenarios.

Research question: How to make curricula more flexible in higher education institutions?

✓ Abductive reasoning: How would a didactic conception involving multimodalities allow curricular flexibility in higher education?

✓ Object of study: University Didactics

✓ Field of action: Modes in Higher Education

General objective: To base a didactic conception based on multimodalities to make the curricula in Higher Education more flexible.

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Forename(s), Surname(s) of the Speaker

Sylvana Mariella Valdivia Cañotte

Title of the presentation: Inverted learning for the current challenges of university education: an analysis from the review of the literature

Abstract

Reverse learning is a pedagogical model in which the activities that are normally carried out in a course are exchanged. This presents content through videos and other resources before class and leverages class time for interaction, in-depth study, and application. Currently, flipped learning is spreading in universities since it can be an alternative for face-to-face and hybrid learning. The paper aims to present a review of the literature on the main research that addresses flipped learning from the teaching perspective and analyse the conceptual bases and their application in university education.

Presentation

Higher education is currently facing challenges as a result of the pandemic and the incorporation of technologies in the teaching-learning process. Flipped learning is a model that can address these challenges as it proposes to transfer the learning of the contents, which usually occurs in the classroom, to a virtual environment through resources such as audios or videos. In this way, it is proposed to flip the activities that are normally carried out inside and outside the classroom in order to use class time in a more active way, enhancing student teacher interaction and generating spaces for in-depth study and practice. It also aims to encourage the autonomy of students in favour of their own learning (Tucker, 2012), a fundamental competence today. On the other hand, several authors such as Santiago and Tourón (2014) point out that among the main advantages of the model is the optimisation of time, greater interest, and commitment on the part of students and dedication to individual differences.

An important aspect to the understanding of the term is linked to the distinction between Flipped Learning and Flipped Classroom. For this, it is considered valuable what was pointed out by Martín and Calvillo (2017) who affirm that the Flipped Classroom could be limited to the investment of the structure of the classroom, of the spaces or times, while the term Flipped Learning comprises, in addition to all the above, the purpose of acquiring a deep and significant learning.

Flipped Learning has been applied in some Universities in America, Europe, and like any pedagogical aspect, it works to the extent that teachers are committed as strategic actors in the design and implementation process. In this sense, the main results of a review of 29 research articles selected from the Scopus databases (through Elsevier), Web of Science, Science Direct for their international prestige and scientific rigor are presented. In addition, the descriptors used were flipped learning and flipped classroom, in combination with higher education, faculty, university and academic, ensuring their presence in the title, abstract and keywords of the articles. Empirical studies of free access, written in English or Spanish, and that report research results that address the perspective of the university professor on flipped learning were established as inclusion criteria. It should be noted that an interval of years was not established to have a greater number of sources and that categories were considered: Conceptual bases, application of the approach and teacher perceptions about the approach.

Among the main results, it is identified that the greatest presence of these investigations is located in Europe, North America and Oceania. Likewise, the growing increase in publications in the last two years is evident as a trend. As for the conceptual bases category, most studies refer to the flipped classroom rather than reverse learning. At the same time, most of the authors agree that under this approach the presentation of the subject by the teacher that was carried out inside the classroom occurs outside this space and the tasks that were assigned to be carried out at home, are carried out in class. Therefore, they maintain that, in the first phase, which occurs before the class, the content is reviewed and a consensus is seen in the studies on the use of video as one of the most suitable resources for this phase, since the student can reproduce it at their own pace (Young et al; 2014), reference is also made to other types of resources such as teaching material (Ingason & Guðmundsson; 2018).

As for the application of the model, it can be noted that the studies emphasise the preparation for the understanding of the topics that will be addressed in the class. In the case of the use of videos, these can be created by the teacher (Ingason & Guðmundsson; 2018; Konijn et al; 2017) or a website specialised in the field (Young et al; 2014). Some authors such as (Hew et al; 2020) mentioned complementary activities such as case studies, reflections in the forum and practical exercises.

Regarding teachers' perceptions, studies refer to greater interaction with students as a fundamental advantage (Flores et al; 2016; Ha et al; 2019; Matthew et al; 2019; Ros and Rodríguez Laguna, 2021; Røe et al; 2018; Yaroslavova, et al; 2020) followed by motivation by students (Espada et al; 2020; Flores et al; 2016; Matthew et al; 2019; Yaroslavova, et al; 2020). On the other hand, they find as the main limitation the time load demanded to update the contents, select resources, redesign class activities or elaborate videos (Antonova et al; 2017; Matthew et al; 2019; Rehman et al; 2020; Røe et al; 2018; Simmons et al; 2020).

One of the gaps found from this review is the lack of academic production in Peru and Latin America. While the selected databases point to research from Europe and North America, most studies focus on experimental research, mixed or qualitative studies on course development, performance, effectiveness, and student perceptions, rather than on the analysis of the teacher's perspective.

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Forename(s), Surname(s) of the Speaker

Laura Bibiana Quevedo Padilla

Title of the presentation: *Reflections on the challenges on the understanding and implementation of the models of Curriculum Internationalisation in Higher Education in Colombia*

Abstract

The curriculum internationalisation (CI) is one of the bets of Higher Education Institutions (HEIs) as a response to global trends and demands. However, in Latin America and Colombia specifically, it continues to be one of the most lagging processes, because the institutional actions of understanding, adaptation, implementation, and evaluation of the guidelines that point to an internationalised curriculum, have not been welcomed with the same opportunities or management conditions. There are challenges in the execution of the CI in the teaching-learning processes, in the construction and definition of own strategies that strengthen and promote a much more articulated understanding between the normative requirements of the CI, its development and evaluation.

Introduction and central approaches:

In the last decade, higher education institutions, governments and national and international organisations have strived to have a much more proactive, diverse, and innovative role in their approaches to internationalisation (Botero, 2010, p. 94). This effort as mentioned by Martínez (2014, p. 10) has been reflected in the challenge of consolidating a transformation aimed at ensuring a high-quality education, much more coherent with the realities of each institution, which ratifies a need for change, transforming itself into an increasingly international academy from its vision and mission and in its scope.

In this same line, authors such as Téllez and Langebaek (2015, p. 94) reaffirm it when they say that: "Colombia continues to be a country characterised by rigid and long undergraduate programmes, not conducive to international mobility, both of Colombians who want to have an international experience, and of foreigners who want to come to Colombia."

However, the national picture is not as promising as it is set there. In Colombia, higher education institutions respond to the rapid expansion of internationalisation, building policies that still fail to integrate the efforts and challenges that are generated within them, recognising academic programmes or faculties in public universities that generate contacts with peers abroad.

On the other hand, private universities start the process from the internationalisation of the curriculum, with the aim of attracting the interest of students. However, the disadvantage that Colombia has in the field of the internationalisation of higher education, given in the rankings of higher education institutions, must be corrected through the development of relevant policies focused on the strengths of institutions and their needs (Cañon, 2009, p. 46, 111).

It is essential here to understand that the regulatory bodies of each country are the ones that essentially set the guidelines for content selection, teaching, learning and curriculum design in national and global contexts. This situation may have a marked normative bias, since the selection of these



curricular orientations will inevitably be oriented to these policies, the result being that "... the starting point is usually not very precisely defined and the point of arrival often coincides with a selection of features of some system or a foreign institution that are supposed to be successful in terms of internationalisation" (Luchilo, 2018, p. 42).

This event gives rise to reflect first on the scope of the actions carried out in the light of a defined evaluation, because although each HEI establishes a model to develop and evaluate the internationalisation of the curriculum, based on the minimums established in the regulations, this does not constitute a standardised guideline for the process that accounts for the minimum quality standards. Likewise, and secondly, the internationalisation models within higher education do not declare indicators for the evaluation of learning by the components of said activity, which are aimed at identifying the specific responsibilities of students and teachers in the process, thus glimpsing the complexity of the internationalisation of the curriculum.

Furthermore, a difficulty has been identified in the understanding and development of international and intercultural skills of educational actors to develop curricular internationalisation jointly and comprehensively, revealing educational processes isolated from the culture and contexts of higher education institutions, an aspect that differs completely from the ideal of internationalisation.

However, the evaluation of the internationalisation of the curriculum in Colombian educational institutions is part of the fulfillment of quality requirements required for the operation of their academic programmes. Conditions that "... are required in their entirety without any distinction, but in the exercise of the evaluation they must be interpreted according to the context, their own characteristics and taking into account the heterogeneity and nature of the Institutions" (Arango and Acuña, 2018, p.39-40). This reveals the absence of an evaluation of the curriculum internationalisation processes transversal to the functions of teaching, research, and extension, focusing instead on the verification of the public promise of the programme in accordance with the institutional, criteria that become very disjointed of those particular characteristics of the real context.

The foregoing demonstrates a contradiction between the normative requirements in relation to the implementation of the curriculum and its evaluation reviewed from a holistic perspective, understood as a continuous process, and oriented to the improvement of educational processes, led by the directives and supported by all the managers involved in the internationalisation of the curriculum and an evaluation more aligned with the specific context and the purposes and institutional objectives.

Conclusions

HEIs' efforts to have a guided process on internationalisation, which responds to the demands of the dynamic means of development of professionals in training are recognised, however, these efforts are characterised by being disarticulated from the needs of the HEIs and the Colombian regulations little specific to the internationalisation process.

The development of various actions by the HEIs within the framework of the internationalisation of the curriculum is also evident, however, they do not determine specific responsibilities of the participants within the internationalisation process, a situation that affects decision-making on continuous improvement, since, due to the lack of specific responsibilities, the actions are made without the involvement of the participants.



Additionally, although the institutions make an effort to implement activities for the development of the internationalisation of the curriculum, a rigorous evaluation is not carried out that accounts not only for the management carried out in the light of the items provided in the regulations, but also for the sufficiency and relevance of these actions and the impact on the participants, with the purpose of making the forceful improvements within the process and its participants.

Higher education in Colombia, despite having made some progress in the area, is still very incipient and there are gaps in the understanding, adaptation, development, and evaluation of the internationalisation of the curriculum in accordance with public policies and general guidelines provided for this. In other words, so far, no clear alternatives and guidelines have been established for the HEIs' curriculum internationalisation that would allow a pertinent planning and development adjusted to the context, able to respond to the needs and to operate with existing resources.

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Forename(s), Surname(s) of the Speaker

Cristian Fernan Muñoz Muñoz

Title of the presentation: Burnout Syndrome and Reflective Educational Practices in Primary and Secondary Teachers



Abstract

The research aims to analyse the contributions of the implementation of a burnout syndrome intervention programme based on reflective educational practices in primary and secondary school teachers in a city in Colombia. The methodological design of the research is located in the Social Critical approach, through which an action is sought that seeks to improve the problems identified with the participation of the same population to be investigated. The methodological path of the research corresponds to the Educational Action Research, aiming at the production of knowledge that proposes and transforms, through a process of debate, reflective and collective construction of knowledge with the other, between the different actors that have a common experience.

The speaker has not submitted a paper for the purposes of this publication.

Forename(s), Surname(s) of the Speaker

José Antonio Taquia Gutiérrez

Title of the presentation: Stimulation of numerical skills in children with visual impairments through image recognition (University of Lima)

Abstract

The importance in the learning process of training of children with visual impairment and low vision requires the contribution of new technological devices that integrate in their design the feedback in the sequences of stimulation of touch and hearing. The software developed in our project sought to stimulate the identification of geometric shapes and perform mental calculations to achieve a goal. The tools developed work on both a personal computer and low-cost processors. Likewise, the study is a contribution in the development of applications to stimulate numerical calculation skills in children with visual disabilities.

Introduction

The stimulation process in visually impaired or low vision children should be focused on promoting perceptual and sensory development that favours their inclusion in new educational models. As alternatives to technology to the stimulation of the visually impaired, there are currently touch screen software for learning topics according to levels (Hahn, et al, 2019), braille learning devices, artificial intelligence software for detection and recognition of objects, faces, etc. In addition to these tools, we show the use of three applications designed to stimulate children with visual disabilities in numerical calculation, the first that identifies, using a camera, the number of units, tens, hundreds and thousands in a plastic base and verbalises the number that has been written; the second, a detector of geometric shapes using artificial vision libraries to identify various pieces and finally a game called a maze, which allows the child to move the computer cursor in a grid logic to reach a target square. For the design of these developments, in-depth interviews were conducted with the teachers responsible for stimulating the children and the most relevant characteristics for the children who interact with

the application were determined. These developments contain two elements in conceptualisation: receiving the signal activated by the student (either by detecting images or by movement of the cursor) and auditorily feedback on a response to the proposed stimulus and measuring its progress.

Background

In applications with laptops, it is very common to find that the access of visually impaired people to the functionalities of the devices facilitates the interest in auditory feedback and the use of these technologies as a complement to teaching (Beal and Rosenblum, 2018, p. 17-18).

For the practical part as Kline (2015) states "one of the greatest advantages of psychometric testing using computers is the ease of recording interactions and conducting experiments tailored to the unit of analysis" (p. 195). It is for this reason that the tasks designed to evaluate the students have previously received functional validation from the teacher responsible for the stimulation.

In the field of stimulation, the importance of emphasising the child's attention is highlighted: "The effects of passive versus active stimulation are weaker, so attention manipulation plays an important role" (Tsai et al, 2016, p. 8). Likewise, the creation of virtual environments improves the interaction of people with visual disabilities by emphasising sound when fulfilling various tasks entrusted. The environments in three dimensions have an additional advantage, they generate a very powerful stimulus in the tactile exploration in addition to helping to strengthen the memory, also stimulating the spatial location by discriminating the sound sources, it is for this reason that any application for the blind must be incorporated to people with visual disabilities in the initial phase of the design because the result will be more useful (Sánchez, 2010).

Among the technologies that are used for artificial intelligence applications in visually impaired people, the use of computer vision that has been used for various applications that improve the lives of visually impaired people stands out (Ahn et al, 2018). In Waisward et al, (2019), the recognition functions of the Orcam device are described, which is added to the frame of the lenses and incorporates image and audio processing technology for reading and object recognition, managing to improve the quality of life of people with visual disabilities. In the works of Sozim, et al, 2017, object recognition devices with computer vision are presented that help recognise the faces of people who interact with people who have visual disabilities, likewise in Jóhannesson, et al, 2016, the importance of vibration feedback as a response of visual sensors is described.

Implementation

The students performed three routine exercises of varying difficulty. They were developed in the environment of the school's technology laboratory with the presence of the teacher in charge and a specialist in taking results. For the development of the assessment, the student was provided with an explanation of the dynamics with the help of an example exercise. The assessment of the applications was carried out with the assessment of the users. The cognitive ability that is sought to stimulate is mathematical ability and the questions required the student to perform mental calculations to obtain the correct answer.

In the first and second applications, image recognition and object detection algorithms were used that generate a vector signal that, in turn, becomes a message that feeds back to the visually impaired child. The software developed runs on a laptop processor that connects with a camera, a screen, a

keyboard and speakers that serve to listen to the sound response and can also adapt a headset with headphones. The second stimulation routine is carried out by presenting geometric pieces to the students with different shapes and the tutor of the class assigns identification tasks of a particular shape or choose two equal shapes.

In relation to the physical components, artificial vision routines can run on devices such as raspberry pi in the serialisation of signals to detect shapes and perform numerical calculations, but it is in the voice processing for the feedback of the results of each exercise that there are opportunities to generate a closeness with the student and generate a closer learning environment, this is because artificial vision techniques are non-intrusive and generate interest not only to students but also to their teachers.

Conclusion

The importance of using machine vision to recognise shapes and complete stimulation drawings is a tool with a lot of potential that has not yet been used intensively in the field of stimulation. Due to the technology used, it is necessary to parameterise according to the location of the stimulation unit the lighting values that allow the image captured by the camera to be processed properly. There are pedagogical concepts to consider in the design of new artificial vision stimulation technologies for people with visual disabilities, especially how to integrate in the participation of games, the sense of touch and auditory feedback and how can learning levels be designed from these. For this reason, the cooperation between experts from Latin America, the Caribbean and the European Union is an opportunity to innovate in methodologies, explore techniques that include disruptive technologies such as artificial intelligence to expand the lines of research in a field that has much to develop in Latin America and the Caribbean.

Note: Project material at <https://youtu.be/1moJbYMnUXk> and <https://www.taquialora.com>

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Thematic Session 12: Agriculture and Food Security

Forename(s), Surname(s) of the Speaker

Santiago Henao Galeano

Title of the presentation: Smart Agriculture: Sustainable response to the needs of the fields of Sucre-Colombia

Abstract

The acquisition and analysis of data applied to crops play a fundamental role in the new agricultural dynamics worldwide, especially in a context of population growth that leads to an increase in food production. Among the challenges posed by a technological transition in agriculture, the efficient use of water resources is of special relevance because this sector makes use of much of the world's fresh water. This presentation aims to discuss the development of heuristic techniques to estimate soil moisture, making use of a minimum number of sensors, which, intelligently located, allow converting the captured information into the input for informed decision making in irrigation systems.

Introduction

According to the Food and Agriculture Organisation of the United Nations (FAO), feeding a population of 9100 million people by 2050 requires an increase in food production by 50% (FAO, 2017). This increase represents a major challenge, considering the scarcity of resources and their excessive use; for example, conventional agriculture uses approximately 70% of the world's fresh water (FAO, 2011; Uhlenbrook et al, 2022), of which 35% is considered a loss (Chartzoulakis & Bertaki, 2015).

The economy of Sucre-Colombia is based on livestock and agriculture, where 65.7% of the territory is used for agricultural production (Government of Sucre, 2020). Additionally, a study for the territorial characterisation of the producers of the department, indicates that most have low levels of production

in their crops and low levels of use of information and communication technologies as a tool for decision-making (Government of Sucre, 2020).

To improve crop yields, water saving, and efficient use of water become determining factors in the new dynamics of agricultural production (Zotarelli et al 2011), where digitalisation and developments in the Internet of Things, cloud computing and wireless sensor networks have made it possible to talk about smart agriculture (Talaviya et al., 2020; Wolfert et al., 2017; Fang et al., 2014). The inclusion of these elements has facilitated access to the variables of influence of crops, and with this, the use of information to make better decisions (Ndzi, 2014; Tiglao, 2020).

Core ideas

Despite multiple advances in technology, agriculture is one of the least digitised sectors, largely due to the cost of sensor systems, which makes it difficult for farmers to access these tools (Dubois et al, 2021). Determining a good location of these devices has significant impacts on irrigation efficiency (Soulis & Elmaloglou 2016) and optimising the number of measurement points allows to reduce the total cost of the system and its energy consumption (Dursun & Özden, 2017). Therefore, the number of sensors and their location on the ground is a topic of great importance (Pramanik et al, 2022).

To estimate the moisture distribution of a terrain, measurement points are required in certain positions, and use interpolation techniques that allow establishing an approximate value of the humidity along the surface. With a large number of measurements points the accuracy of such an estimate increases; however, this is neither practical nor scalable as the terrain grows in extent (Andugula et al, 2017). Currently, geostatistical techniques, neural networks and metaheuristics have been implemented to estimate humidity with a given number of sensors (Zotarelli et al., 2013; Andugula et al, 2017; Karandish & Šimůnek 2016; Dursun 2016). As a complement to the problem described the question that arises is: What is the minimum number of sensors and how should they be located to obtain the best estimate of humidity possible?

To solve this problem, it is proposed to build an algorithm using a Greedy-type heuristic technique, in charge of adding, one by one, sensors that improve the estimation of soil moisture, doing tests throughout the exploration region and selecting the location that most closely approximates the real values. The algorithm, in turn, has a pruning module, which allows to eliminate a sensor if when removed from the network, the variation of the error does not exceed a certain threshold, that is, if the contribution of the sensor to the estimate is not significant.

The preliminary results of the algorithm, for a given humidity model, are presented in Image 1, where in section a) the original moisture distribution model of the terrain is evidenced, in section b) the estimate is presented by the intelligent location of the sensors, where the red 'x' represent the location of the sensors and the white point is the last sensor located. Subsection (c) presents the number of iterations performed by the algorithm prior to its shutdown.

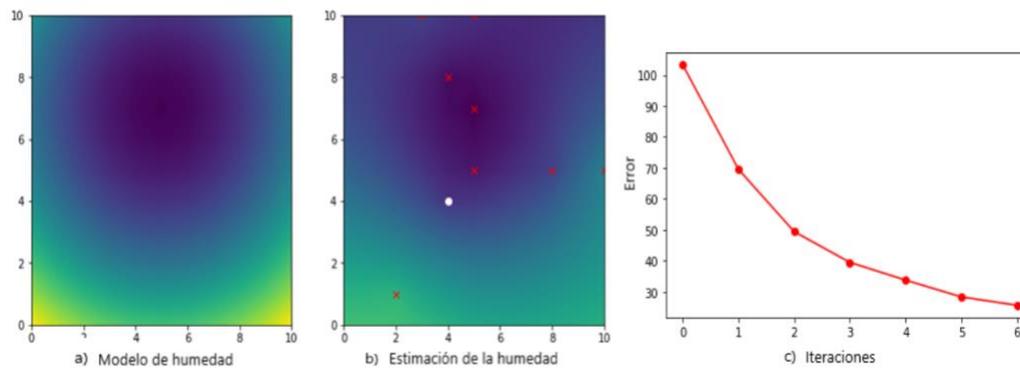


Image 1. Preliminary results of the algorithm - Own elaboration

Conclusions

Food production plays a critical role in building and transforming society, especially at a time when optimising input use and increasing crop yields are required to meet a growing food demand. To encourage the use of technologies and smart agriculture as a response to the improvement of agricultural processes, it is necessary to reduce the gap that slows down the digitalisation of fields and favour developments at a global level that seek to create easily accessible and low-cost solutions. With this in mind, the preliminary results of the sensor optimisation algorithm are promising; since they generate good estimates of the humidity conditions of the crop with the least number of devices. This translates into a lower cost of the systems, favouring in the long term an intelligent and sustainable transition.

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Forename(s), Surname(s) of the Speaker

Diana Beatriz Bravo Benavides

Title of the presentation: Climate Resilience Index of Agricultural Systems, the Ecuadorian Case

Abstract

In Ecuador, agriculture is an economic activity of strategic importance, not only because it represents about 9% of production and because it is the main source of employment it generates in the rural sector, but because it produces about 95% of the food consumed internally (INEC, 2019). The ability to adapt to this phenomenon avoiding the greatest damage will depend on the characteristics of each agricultural system (Torrico, 2013; Altieri, 2013; FAO, 2016). Resilience is considered a new perspective on how to analyse and plan for the effects of climate shocks and stresses that threaten development progress (FSIN, 2014; FAO, 2016) This resilience may include different strategies, such as productive diversification, risk prevention and management, procurement of climate insurance, development of mitigation infrastructure and sustainable use of biodiversity (Morecroft *et al.*, 2012; AECID, 2018). The objective of this research is to assess the climate resilience possibilities of agricultural systems through the construction of a climate resilience index of the 24 provinces of Ecuador. The results found show that the provinces that have the most resilient agricultural systems or that have optimal levels of climate resilience are the provinces of Guayas, Pichincha and Azuay, the provinces that are located in the east show a lower level of resilience compared to the other regions of the country.

Introduction

We know that one of the most severe problems facing the planet is global warming, a problem caused mainly by anthropogenic activities that generate greenhouse gases, which have seriously affected the environment and contributed to climate change (FAO, 2016).

The sudden changes in the climate that have been evident in recent years have caused strong concern because this is reflected in increasingly extreme and less predictable weather events, such is the case of the El Niño and La Niña phenomena in Ecuador. These effects extend to various productive, economic, social, and environmental areas.

The scientific literature reports that agriculture is one of the most vulnerable sectors to the phenomenon of climate change, the increase in temperatures ends up reducing the production of desired crops, while causing the proliferation of weeds and pests. Changes in rainfall patterns increase the likelihood of short-term crop failure and long-term production reduction (IPCC, 2014).

This, in addition to the new demands of a dynamic global economy, the continuous decline in the quality and availability of natural resources are beginning to deteriorate agricultural systems, with risks ranging from shortages of food supplies, rising product prices, migration, hunger, poverty and food insecurity (ECLAC, 2010; FAO, 2016).

In our country this phenomenon represents a new threat to the livelihoods of farmers, considering that a high percentage of their economy, approximately 9% of GDP, and a large part of their workforce, 30%, depend fundamentally on climate-sensitive agriculture (INEC, 2014; Valdivieso, 2016).

Consequently, there is a growing need for approaches to assess and monitor progress towards resilience. The origins of the term "resilience" imply strength and resilience, more recent studies in ecology, socio-ecological systems, disaster management, and urban sustainability emphasise that resilience requires flexibility, learning, and change (Adger, Hughes, Folke, Carpintero, and Rockström, 2005; Berkes, Colding and Folke, 2003; Fields, 2009; Miller et al, 2010; Prasad et al, 2008; Twigg, 2007). In the context of climate change, resilience can be understood as the ability of a system to cope with climate shocks and stresses.

Therefore "resilience" is considered a new perspective on how to analyse and plan for the effects of climate shocks and stresses that threaten development progress (FSIN, 2014). Much of the literature combines physical, social and institutional considerations within the definitions of complex systems, in this framework we intentionally separate these elements to differentiate the methods and data needs for analysis. For each dimension of the framework, a small number of sub-criteria were identified to guide the assessment. Resulting in 7 dimensions: 1). Physical (extension, agricultural diversities.), 2). Production (agricultural and livestock practices, seeds.), 3). Economy (market access, workers), 4). Environment (soil, water, weed management practices...), 5). Social (associativity, land ownership...) 6). Governance (rules and customs, training...), 7). Technological level (equipment, machinery...)

This work proposes to evaluate the resilience of agricultural systems through the construction of a climate resilience index (CRI), for which data from the Survey of Surface and Continuous Agricultural Production (ESPAC) for the year 2019, prepared by the National Institute of Statistics and Censuses (INEC) is used. The CRI measures the level of resilience of agricultural systems at the provincial level using the above factors.

The calculation formula is:

$$CRI_i = 1/f \sum Sub Index_i \quad (1)$$

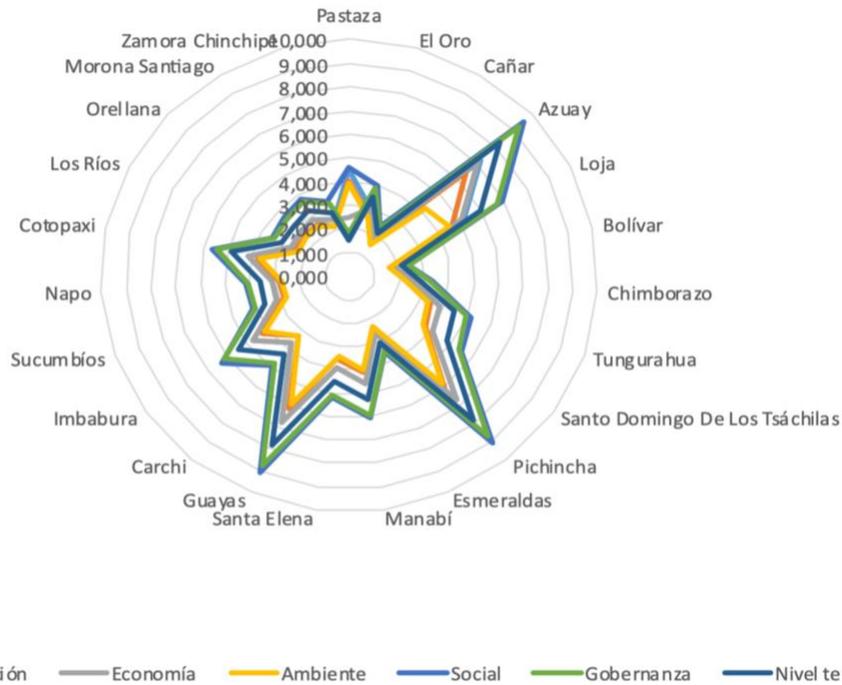
where $i = 1 \dots, 23$; $f = 1, \dots, 7$; CRI_i is the resilience index of agricultural systems at the provincial level i , $Sub Index_f$ is the f -factor index per province i . In practice, the CRI_i is constructed with the average values of each subscript. The subscripts are constructed by means of a formula that allows to relativise the value obtained. The formula is as follows:

$$Sub index_i = \left\lfloor 9 * \frac{Value_i - Minimum value_i}{Maximum - value - Minimumvalue} \right\rfloor + 1$$

In Image 1. the 7 dimensions evaluated are shown: Physical, Production, Economy, Environment, Social, Governance and Technological Level, showing marked similarities in each dimension of the matrix.

The provinces furthest from the origin show more resilience in that dimension, the opposite happens with the provinces that tend to the origin, the governance dimension shows better levels of resilience for all the provinces of the country, while the environmental dimension reveals less resilience.

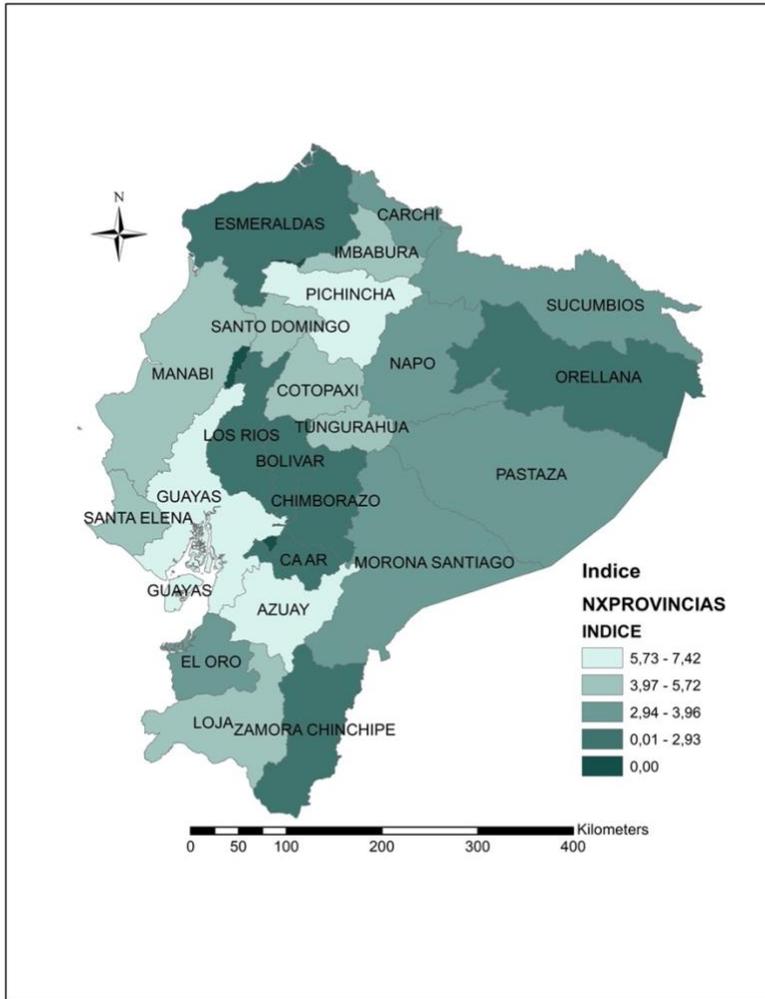
Figure 1: Dimensions of the Climate Resilience Index of Agricultural Systems.



Below, map 1 shows the climate resilience index of the 23 provinces of the country. The scale presents high, medium, and low levels of resilience. The provinces that have the most resilient agricultural systems or that have optimal or high levels of climate resilience are the provinces of Guayas, Pichincha and Azuay, the provinces that are located at a medium level of resilience of climate resilience are: Loja, Santa Elena, Santo Domingo, Cotopaxi, Tungurahua and Imbabura, El Oro, and in the low levels of resilience are the provinces of Morono Santiago, Pastaza, Napo, Sucumbíos, Carchi, Pastaza, Zamora Chinchipe, Orellana, Esmeraldas, Los Ríos, Bolívar, Chimborazo and Cañar.

Thus, the provinces that are located in the east show a lower level of resilience compared to the other regions of the country.

Map 1: Agricultural Systems Climate Resilience Index at the provincial level



Conclusions

Understanding the characteristics of agricultural systems is the basis for designing more resilient agricultural systems, reducing the negative impacts of climate change on productivity, and avoiding problems that may affect the food security of populations, since it provides a new perspective of analysis, so that strategies can be designed by zones.

The challenges of building an agriculture resilient to climate change imply a constant effort that seeks the profitability of farmers in a sustainable way. This effort must be promoted by public policies and strengthened by the transfer of knowledge generated in universities and research centers and must actively and participatively incorporate farmers and peasant communities.

Resilience not only involves the identification, testing, demonstration, but also the dissemination of good agricultural practices to counteract changing climatic conditions.

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Forename(s), Surname(s) of the Speaker

Marina Teodoro

Title of the presentation: The patent multiplicity of agrochemicals: the regulatory prospects of use in agricultural pesticides and the incidence of cancer in vale do são Patricio

Abstract

We aim to relate the lack of a proper regulation for polymorphism in agrichemical molecules and for agrochemical usage, the possibility of patent breach and use of pesticides with the incidence of cancer in Vale do São Patricio. To do so, the methodology used comprises the reading of the legislation on generics and patents, and the bibliographic review of studies of impacts caused by polymorphs through deduction and inference, since the precise reading on the subject is scarce, if not non-existent.

Presentation

Legislation has a direct effect on pesticide use and commercialization. It conditions the distribution and destination for pesticides. When it comes to the Cerrado's frontier, where Saint Patrick's Valley is, there are three major legislative issues: 1) the environment in Cerrado is protected by hierarchically lower laws, both federal (law 6938/1981) and local (laws 12280/1994, 19423/2016 and decree 4580/1995), but not by the Constitution (BRASIL, 1988); 2) there are no regulations on the amount of pesticides that can be used for different crops in Brazil, even though there is limit on the acceptable amount of residues present in post-harvest products such as grains and fruits; and 3) there are no regulations on pesticides that have polymorphic forms.

The use of pesticides was, at first, established as a form to promote the “modernization” of agriculture after World War II, which resulted in the competitiveness of Brazilian agriculture on a global scale. The modernization of Brazilian agriculture entrenched rural inequality and relied heavily on chemical inputs. Powerful lobbies are staunch defenders of this agricultural model. There are studies that have shown that the quantitative and qualitative data had been manipulated to show agriculture is not harmful to the biome Cerrado (MATOS; PESSOA, 2011). Incomplete or incorrect data have also influenced the (lack of) pesticide regulations in the country.

In 1975, the National Plan for Agricultural Development (PNDA) was implemented. One of its main pillars was state support for pesticide usage in order to support the competitiveness of Brazilian agribusiness (ALMEIDA, 2017). It was only in 1989 that Law 7.802 (PELAEZ *et al*, 2010) provided some sort of regulation on pesticide usage. Law 7.802 somewhat described the technical process involving the production, distribution and research of pesticides, relaying the competence to regulate usage to the Sanitary Vigilance Agency (ANVISA). ANVISA is the agency responsible for sanitary regulation and administration of foods and drugs in Brazil. In 1992, ANVISA published by-law number 3 that defined terms for pesticide usage and deliberated about risks to human health caused by pesticides, their impacts on rural production and the security of food chains. ANVISA's by-law set a precedent that was later followed by regulations from other executive federal agencies such as Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA) and MAPA.

In 2002, Federal Decree 4.074 made new denominations and uses for pesticides under health and safety considerations that, among other things, considered studies, guidelines, and projects for pesticide disposal regarding the human and ecological impact of pesticides (PERES *et al*, 2003, p. 21-41). These newly created “registration systems” were fundamental for large rural producers and regulating agencies to establish clear criteria for pesticide use. For the first time, pesticides were

legally considered harmful and potentially chemically damaging for environmental and human health. However, both Law 7.802 and Decree 4.074 relayed the responsibility of establishing limits on pesticides usage and detection to ANVISA.

Brazilian legislation on pesticides is currently obsolete due to the growth of the international and national market for agricultural commodities. Even the recent Federal Decree 10.833 (October 2021), which included the definition of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), does not limit the dosage for pesticide usage in crops. Large companies connected to the chemical industry monopolized the market by registering their patents and technological innovations, which generated a supply system exclusively for these products and created an arbitrary consumption scheme (PELAEZ *et al*, 2010). From all pesticides, Glyphosate, for instance, (non-selective herbicides) alone represented 60% of the global market sales in the early 2000s, and it dominates the Brazilian pesticide market. Nevertheless, there are no specific regulations on the use of glyphosate in production, whether it could lead to water or soil contamination. Such open policy was ensured with the passing of resolution RDC No. 441 on December 2nd, 2020, that established registration guidelines for glyphosate sales but not on its use (Brasil, 2020). According to Amarante Junior *et al*. (2002), glyphosate's toxicity is low, but it causes long-term chronic birth defects in animals when the dosage is beyond what are determined safe levels, which is set in 700 µg/L in potable water in the United States. In Brazil, ANVISA regulates this safety limit for human ingestion by setting each limit (in most fruits is 200 µg/L; in cereals, the range goes from 50 µg/L to 1000 µg/L). In soy, the residue limit of glyphosate is 10 mg/Kg, which is two hundred times more than the limit in European Union of 0,05 mg/Kg.

Glyphosate is one of the molecules that presents polymorphism and there is no regulation of polymorphic structures when used in the application of pesticides in Brazil. The national criteria for patents have failed in this instance, since it does not follow the production chain, nor does it monitor the presence or absence of polymorphism in the structures patented. The control of polymorphic structures is key to controlling results in pesticide use, considering it affects biochemical components and “the lack of control of polymorphic forms [...] opens up the possibility to indiscriminate dosage [of pesticides] that can amplify environmental impacts” (TEIXEIRA *et al*, 2019). In 2006, Decree 5.981 (BRAZIL, 2006) ensured the registry of pesticide equivalence, not with the purpose of patent validation or controlling polymorphic structures, but for medical purposes connected to the toxicology and ecotoxicology of these products (PELAEZ *et al*, 2010).

De Lima Tejerina (2018, p. 229-249) highlights the lack of data on pesticides in Brazil, underlining the creation of the national health service (SUS) and its role in the process, as well as data from the agro commerce census as evaluators of the situation. What exists are recommendations from health authorities (PIGNATI *et al*, 2017) that outline pesticide use and its consequences. The 1988 Federal Constitution (BRAZIL, 1988) establishes general guidelines that are further regulated by both federal and state laws. If federal legislation orders that a pesticide must be used with caution, a state legislation (such as Goiás) would establish in its own regulation on pesticides widely used in within its territory. However, what could be a solution turns out to be two challenges: 1) *Brazilian states do not single out peculiarities or address issues found in the region because state level legislation is a direct copy of federal legislation*; and 2) *if states do single out location-based issues then there is no control or surveillance whatsoever to ensure that the legislation is being followed*.



When it comes to Goiás, the state government is responsible for drafting legislation molded for its own needs. The state laws 12.280/1994 (GOIÁS, 1994), 19.423/2016 (GOIÁS, 2016) and Decree 4.580/1995 (GOIÁS, 1995) have been regulating the matter locally. They offer guidelines on the control of production and use of agrochemicals, closely aligned with Federal Legislation. This legislation would be forced to change if the Federal Constitution changes its guidelines. The current pro-pesticide trend in legislation facilitated record production of 237,600,000 tons of pesticides that were applied to a planted area of 61,000,000 ha. Increased pesticide production contributed to the growth of Brazil's GDP via growth in agricultural exports and greater investments in grain planting, harvesting and storage. A rise in grain production follows increased pesticide use, as a direct result of the improvement in production and transformation of the sector. In other words, the growth and modernization of agriculture is reliant on agricultural inputs that improve productivity. In order to use certain pesticides, such as glyphosate and atrazine, proper legislation would establish strict criteria in accordance with their risk.

A polymorphic is “the ability of a substance to exist as two or more crystalline phases that have different arrangements of the molecules in the solid state but are otherwise identical in terms of chemical content” (HEURTAULT et al., 2003). These different structures directly influence the physicochemical properties of the input, which start to behave in different ways, despite their chemical correspondence. If again, we take glyphosate as an example, it means that this same molecule exists in more than one geometric form, and for each of these geometrics forms, the pesticide will behave differently, biological and chemically wise. If there's no regulation or control of polymorphs, there's no way to predict which form is being produced and what impacts it could cause in the environment.

Moreover, there's a legal interface to the matter: molecules cannot be patented, but their crystalline (geometric) forms can. That means that no regulation or control of polymorphs could also entail a breach of patent rights held by companies around the globe. That's why it's relevant for the cooperation between Latin America and the Caribbean and the European Union.

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Forename(s), Surname(s) of the Speaker

Edithe Rodrigues Neta

Title of the presentation: The impact of agroecological farmer's market on the life and academic-citizen formation of young growers in the state of Paraíba (Northeast, Brazil)

Abstract

Agroecological farmer's market promote the commercialization and exhibition of healthy (organic) food and other products, in addition to vast cultural experiences (e.g. music presentations, talks). The produces sold in the farmer's market are directly from the producers ("farm to table"), which motivates the permanence of young farmers in their fields. This study took place through field research in agroecological farmer's market in João Pessoa (Paraíba state, Brazil) and we used quantitative and qualitative methods, document analysis, and interviews with young farmers. Our results indicate the level of participation of these young professionals in agroecological farmer's markets and their relationship with academic training.

Introduction

In the state of Paraíba, as in the entire of Brazil, a series of economic activities complement the income and guarantee the permanence of young farmers in the rural areas in which they live. However, this permanence of the young peasants only occurs if their economic activities generate income and value for their social culture identification.

Often the peasant's income situation is constrained by the middlemen, who, most of the time, apply lower values to the products, appropriating the work of the peasants. This favours social and market inequalities. So, to change this scenario, the agroecological farmer's markets appear as spaces and opportunities that allow fairer marketing (TROILO and ARAÚJO, 2016).

Strengthening the training of young peasants depends on the search for programmes, projects, and actions that enable these young people to structure their rural properties in agroecological transition processes. Undoubtedly, there is still a need for progress in the organisation of production, processing, and regional marketing of this segment of society. Therefore, it is necessary to improve the work environment to enhance the motivation and differentiated care for this new generation of farmers. Actions and projects that present pathways for the academic and citizen training of young people may improve the organic grower's perception of their autonomy, consequently, reducing the distance between theory and practice, in addition to preparing them for the context of work in the agricultural field (NOGUEIRA et al., 2020).

Agroecology deals with significant factors in the history of peasants and strengthens young people with the countryside. This science is a method of food production that connects the family with different modes of production, knowledge, environmental management, and makes them feel part of a group of people with common interests. Moreover, agroecology provides subjects that help them manage the property and deal with day-to-day processes (CANDIDO; TRAVESSINI, 2020).

This study comprises a part of a series of research actions carried out by the Extension Center for Territorial Development and Agroecology (NEDET-UFPA), in partnership with the Pastoral Land Commission (CPT). Since 2014, we facilitate and investigate the influence of agroecological knowledge on the academic and civic education of young farmers. By having the opportunity to undergo technical or university training and/or free courses, these rural young people improve and share their knowledge with the space around them, that is, go beyond the family experience and reach a bigger group of people in society.

Presence and youth protagonism in the reality of agroecological farmer's market

The young peasant, faced with the search for financial autonomy, is exposed to two paths: (1) young person decides to go to the urban areas to search for jobs and new areas of study; or (2) stay in the countryside whether practicing agriculture with their family or even creating their space to sell products at farmer's market. The decision to stay involves a set of actions and, in this process, we find the important role of young farmers being organised in the social pastorals of the Church and also in broader social movements forming politically and technically.

NEDET relates to the realities of young people by establishing follow-up work at agroecological farmer's markets and dialogue with growers. So, the methodology of this work was carried out through field research in four agroecological farmer's markets in João Pessoa (Paraíba-Brazil). These farmer's markets are organised by groups of families of local growers known as Ecovárzea, Ecosul, Ecocap, and Organisation of Organic Farmers of Jacaraú. We applied quantitative and qualitative

techniques, dialogue circles, and interviews with young farmers. Our investigation allowed the documentation and understanding of the complexity of the influence of agroecological farmer's markets on young peasant life (Table 1).

Agroecological Fairs	Organization	Total Young Farmers	Total Tents	Representation percentage (%)
UFPB	ECOVÁRZEA	6	18	33,33
Bessa	ECOSUL	4	12	33,33
Equilíbrio do Ser	ECOCAP	6	12	50,00
Ponto do Cem Réis	Jacaraú e ECOCAP	5	13	38,46

Table 1. Number of young farmers present at each agroecological fair surveyed.

Young people (15 to 29 years old) represent 38.78% of the total demographic in agroecological farmer's markets. Although there is a presence of more than a third of the groups of young people participating in the actions in the agroecological farmer's markets, there is a need for projects that continue demanding a greater strengthening of these actions. Hence, young farmers can identify and follow new possibilities existing between the countryside and urban areas, which may increase income generation. In agreement with Lara et al. (2021), this context highlights the importance of strengthening young people in agroecological fairs and social movements.

The agroecological farmer's market *Equilíbrio do Ser* stands out in the data by presenting the largest representation of young people, 14.96% larger compared to the others. This is probably justified by the fact that this farmer's market provides greater incentive to young people through training initiatives, such as workshops held by CPT, NEDET, by the youth organisation itself, also by ECOCAP. From this, a reflection is conducted on the contribution of young people present in rural training programmes. Moura and Ferrari (2016) pointed out that there are many possibilities for building these young people's autonomy to motivate them to stay in the countryside. However, the market challenges in practice are still great.

We observed that the *Ponto do Cem Réis* fair has the second-largest representation of young people. It is important to emphasise that from the moment the young growers began to carry out their sales activities at agroecological farmer's markets, they gradually began to count on the support of the income family and in the sales of food.

As shown in Table 1, the representation of young people at the UFPB and Bessa agroecological farmer's market is 33.33% in total, which consists of an absolute number of 6 and 4 young people. In addition to strengthening young people, it is worth noting that there is an increasing demand for organic food, which contributes to regional food sovereignty. It was even observed that the

responsibility of the digital media (farmer's market websites and Facebook), the treasury, and accounting of the UFPB farmer's market is under the management of the young people of *Ecovárzea*. Agroecological fairs reveal local cultural, social, economic, and environmental characteristics. These characteristics and their relationships are built through historical processes and participants' memories and their usage needs (DAROT et al., 2013). With this complexity, they contribute to the academic-citizen formation of the young participants. During data collection in João Pessoa-PB, a young grower reported that the agroecological farmer's market is a political and educational space in practice, as it does not escape her daily life and can function as an environment similar to a classroom. Through commercialization, the farmer-consumer relationship consolidates the identity of local products and generates economic, environmental, and cultural results.

Another perspective shared with us was from another young farmer who has an academic background as a Technologist in Agroecology. She reported that after taking the course, she was able to better understand the methodologies and tools to deal with her rural property, redesigning the agroecosystem such as reforestation, consortiums of plants, and knowing how to deal with undesirable insects. The view on the relationship of academic training is remarkable. The technician in Agroecology and Agriculture, for example, better develops the techniques, the management, and the valorization of their produced products. Technical qualification results in the development of factors for the growth of productive capacity, adding technologies, partnerships, and greater market and income possibilities.

Final considerations

It is a fact that young people are present at agroecological farmer's markets where young growers seek financial autonomy, technical-academic specialisation, and actively participate in the economic construction of the farmer market. Also, young growers adapt to social networks to spread the work being done at the farmer markets, as well as scheduling of sales. These movements are studied by our research group NEDET-UFPB and some other initiatives, especially of a formative nature, which is promoted in this context in partnership with institutions and social movements.

Young people are an important part of the future of agroecological knowledge; therefore, this demographic group is a key component to improve dialogue, monitoring, teaching, extension, and research linked to agroecological. Food security is in the hands of family farmers, but the process is done through rural-city collaboration and political incentives for Agroecology.

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Forename(s), Surname(s) of the Speaker

Natalia Restrepo Toro

Title of the presentation: Women in Food Sovereignty

Abstract

The objective of the research was to generate a proposal for food sovereignty through the design of a community garden with the women of Caracola Curva, a peripheral neighborhood of the city of Pereira in Colombia. The target population was women, with Participatory Action Research, where interviews, focus group, social cartography, field diaries and bibliographic review were applied. We find that the community has a peasant vocation which it maintains through the cultivation and adaptation of territory. On the other hand, the enthusiasm of women to transmit their knowledge and learn to improve the nutrition of their families is evident; at the same time, it is a liberating space that strengthens the social fabric.

Presentation

The presentation is part of the results of the research project *Mujeres Sembrando Comunidad*³⁴, which was developed with the participation of three semi-workshop students from the psychology programme. The research question was:

Is it possible to design a community garden as an alternative proposal for food sovereignty that contributes to community development and the emancipatory process of the women of the Caracola Curva?

Caracol la Curva is a peripheral neighborhood of the city of Pereira in Colombia, created without any planning, spontaneously by the population that arrives displaced from the countryside to the city. In this sense, it is observed that it was a rural area, which has been transformed with the construction of houses, but preserved its rurality and with crops typical of the population.

Socio-economic shortcomings are evident, where there is no access to drinking water, schools, healthcare, or park and presents physical risks due to landslides.

³⁴ Project funded by the Science Park for Social Innovation (PCIS) through the call for funds for scientific research and technological development in relation to Covid-19



It is based on the concept of food sovereignty introduced by La Via Campesina that raises the right of access to food from the questions like “How do we eat and feed ourselves?”; “How do we use and maintain the land, water and other resources in our environment for the benefit of current and future generations?”; and “How do we interact with other groups, people and cultures?”.

On the other hand, authors such as Vandana Shiva and Yayo Herrera, propose that women are subjects of rights and that historically patriarchy has violated both nature and women, in addition women throughout history have acquired knowledge and skills relevant to food sovereignty.

The research is carried out through Participatory Action Research, where through social cartography, interviews and field diaries, women's knowledge and the identity and connection that the community has with the land has been recovered.

Where an old dump is transformed into a space that provides food such as: peppers, onion, lettuce, spinach, tomato, and aromatics such as: cider, basil, lemongrass, peppermint and spearmint. And knowledge like the elaboration of compost, of repellents and fertilisers, without using chemicals.

As a conclusion, it has been obtained that the garden is a space for dialogue on the skills that allow the recovery of knowledge and ancestral know-how of the community. At the same time, identity is generated by identifying these roots of the field. On the other hand, women see in this space the opportunity to learn to eat well and without the use of chemicals that affect the health of their families. Another very relevant element of the space is to be a space of tranquility and happiness for women, from where they weave social networks that give them support and at the same time detach themselves from their role as mothers and can be themselves and can think of themselves as social and political subjects.

The topics addressed are part of SDG 2 (Zero Hunger), SDG 5 (Gender Equality), two crucial issues worldwide, especially after the pandemic, where it is necessary to generate academic, scientific and social reflections that contribute to the construction of alternatives that solve these problems, mainly from a network space from where you can have a dialogue, discuss and weave ideas, proposals and solutions. In this sense, the results of this research establish a precedent and contribute to the construction of knowledge from the theoretical – practical point of view.

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Sesión Temática 13: Cultura y Saberes Tradicionales

Forename(s), Surname(s) of the Speaker

Edwin Rubio Medina

Title of the presentation: New ethics of human rights that allows for the recognition of the subjectivity of non-human entities, especially the sacred places of indigenous peoples (Universidad del Sinú).

The black line. Towards a vital ethics in- human rights

Human rights have become a fundamental discourse to encourage emancipatory struggles around the world, However, their language remains anchored to colonial, modern-western premises. This research explores the foundations of the invention of the subject of human rights, seeking to go beyond its limits, in order to propose the elaboration of a third subjectivity. This new subject consists of a reconfiguration of the ethical based on three concepts: alterity, commitment and maturity. It conducts to a radical version of an ecological ethic that allows the ontological, political and legal recognition of multiple non-human entities, among which I highlight the sacred places such as the black line. The method used is vitalism based on phenomenology as crucial presuppositions to reinterpret the values spread out by the Anthropocene. In conclusion, in this dissertation I examine new insights on other forms of subjective production within human rights, as an alternative to the severe risks we face as a species.

The speaker has not delivered a presentation for the purposes of this publication.

Forename(s), Surname(s) of the Speaker

Perla Dayana Massó Soler

Title of the presentation: Cultural governance of the city and horizons of cooperation: The European and American capitals of culture

Abstract

The Action European Capital of Culture (1985) has been the subject in recent decades of a growing process of internationalisation: Ibero-American Capital of Culture, Arab Capital of Culture, Cultural Capital of East Asia and African Capital of Culture, among others, are some examples. Although these initiatives present various institutional frameworks and continuities and ruptures in relation to the European manifestation, a model of cultural capital is configured with variable impacts on the material and symbolic space of the city. American Capital of Culture (1998), inspired by the European experience, concerns the 35 nations of the American continent. Cultural capitals are new horizons for bi-regional cooperation in urban governance and cultural policy.

Since its inception in 1985³⁵, the European Capital of Culture (CEC) event has been the first cultural action of relevance and a turning point in the articulation of a European cultural policy.

This emphasis on culture occurs in a framework of institutional transformation of the European mechanism³⁶ and in a global context in which the notion absorbs and displaces other meanings – cultured, anthropological, massive – and is consolidated as a resource for local development. Culture as a resource becomes an inexhaustible incentive for new industries that depend on intellectual property, is used as an attraction to promote the development of capital and tourism, and is distributed on a global scale (Yúdice, 2002). The nerve center of these global processes of investment, distribution and cultural consumption are, without a doubt, cities.

American Capital of Culture (CAC) is a demonstration that emerged in 1997, promoted by the homonymous non-governmental organisation and the International Bureau of Cultural Capitals, both based in Barcelona. Since its inception, the initiative was presented to the Organisation of American States³⁷, which, although it declined direct involvement in the process, at its 77th ORDINARY MEETING of 28 February 2002, approved a Draft Declaration of Support for the American Capital of Culture, presented by the Permanent Mission of Chile to the organisation (CEPCIDI/doc.465/02).

³⁵ In November 1983, during the first Greek Presidency of the European Council, Melina Mercuri, then Minister of culture, invited her counterparts to Athens for a first informal meeting in which he insists on the need to consolidate a common identity and presents the intergovernmental proposal to designate an annual European City of Culture. The demonstration is institutionalised in 1985 by the Resolution of the Ministers responsible for cultural affairs, meeting within the Council on 13 June 1985, which establishes the annual organisation of the European City of Culture (OJ C 153, 22.6.1985). In 1999 the European Commission promoted its transformation into a Community action, renaming it the European Capital of Culture. The Decision of the European Parliament and of the Council of 25 May 1999 (OJ L 166, 1.7.1999) established a new selection procedure with new criteria and a chronological list of the Member States hosting the event.

³⁶ Second and third enlargements: Greece (1981) and Spain and Portugal (1986). Although the accession of impoverished Greece and Ireland, despite institutional obstacles, did not arouse great passions within the Commission, the situation in Spain and Portugal was completely different. With the Iberian countries having competitive agriculture, which would enter the European common market on equal terms, French farmers perceived this accession as a threat and showed great opposition.

³⁷ According to statements by Xavier Tudela, president of the American Capital of Culture and the International Bureau of Cultural Capitals, in an interview conducted for this research, he travelled to Washington in 1998 to present the project to the OAS and was received by Sara Meneses Imber, director of the Office of Cultural Affairs of the Organisation of American States.



Previously, the 15th Interparliamentary Conference European Union - Latin America (Valparaíso, Chile, from 23 to 26 April 2001) proposed "that the institutions of the European Union (EU) and its Member States support the dissemination of the American Capital of Culture, facilitating the development of cooperation activities between the cultural capitals of the EU and America" and "that the countries of the member congresses of the Latin American Parliament and their institutions support the initiative." CAC is not an epiphenomenon; its emergence is part of a socio-political and cultural process that had Barcelona as its epicentre from the 1992 Olympic Games. The Catalan capital that had been catapulted into the international sphere by the Universal Exhibition of 1888 and the International Exhibition of 1929, becomes the first Spanish city to organise an Olympic Games event. The cultural imprint of Barcelona is manifested from the candidacy process itself with an extensive programme of activities that accompanied the sporting event and that became known as the Cultural Olympics. The then mayor of Barcelona, the socialist Pasqual Maragall, takes advantage of this situation to initiate a process of urban and institutional renewal and reposition the city as the capital of the Mediterranean. Its policy will emphasise international municipalism, bilateral cooperation between cities and exchange networks with Latin America³⁸.

In the period between 2000 and 2020, 21 territories (states and cities) of 12 Latin American nations received the denomination CAC. Although the initiative aims to challenge the 35 nations of the American continent, the Federal Ministry of Canadian Heritage has been developing its own programme since 2002, and only 2 American cities (Austin, capital of Texas, and Santa Fe, capital of New Mexico) have submitted candidacies to CAC. So, we are facing a scheme in which cities from Latin America and the (Hispanic) Caribbean mainly participate.

Unlike the European action that allows cities with a favourable report from the Monitoring Committee of the capital to receive the economic incentive of 1.5 million euros (Melina Mercuri Prize) or the Canadian federal programme (which offers an economic endowment of 500 thousand to two million dollars depending on the number of inhabitants), Latin American cities sign an agreement with the organisation American Capital of Culture, by which they commit to repeal -for international promotion, advice and travel- sums ranging from 425 thousand US dollars (Mérida, 2000) and 35 thousand euros (Punta Arenas, 2020).

The communicational dimension is presented as a central axis and backbone of the American Capital of Culture³⁹. The international organisation CAC operates strictly speaking as a private communication group responsible for the international promotion of the territory in question. This promotion is carried out throughout the year of the capital through the subscription television networks Antena 3 Internacional and Discovery Channel, both with a potential audience of more than 90 million viewers in 30 countries.

³⁸ In 1993 the Ibero-American Centre for Strategic Urban Development (CIDEU) was born in Barcelona. A network of Ibero-American cities with the aim of promoting culture and urban strategic thinking. The Ibero-American Capital of Culture demonstration, promoted by the Madrid City Council (in a kind of response) was also born in this period, as well as the reactivation of the Catalan associations (Casal Catalá) in the United States and Latin America.

³⁹ Also, in the case of the CECs. Since Glasgow, 1990, international promotion and the transformation of the image and representation of the city, are key incentives for local administrations.

There is consensus that CEC is a catalyst for the urban image. The impact of the event is explained from the revitalisation of urban space (tactical urbanism, creation of new infrastructures, regeneration of buildings of heritage value), but also from the processes of urban marketing and thematisation / mediatisation of the city.

In both initiatives we are faced with narratives and discourses of political leaders and the cultural field that refer to the instituted imaginary of the *cultural and creative city*. These constructions of meaning, not exempt from conflictuality, interact, intersect, and overlap with specific territorial imaginaries, anchored in social and cultural practices and in the history of the community.

The application processes for cultural capitals refer, in most cases, to top-down dynamics⁴⁰, where local administrations project the capital as an opportunity for economic development through cultural action (tourism, job creation, EU incentives) and national and international visibility. The local associative fabric, cultural operators and citizens are generally incorporated into this process at a later stage and in a segmented manner.

Cohesion and social inclusion are common challenges for European and American capitals of culture. Since 2006 the European Commission ([Decision No. 1622/2006/EC](#)) has included the "*city and citizens*" as one of the essential criteria in the evaluation of the cultural programme of the candidate city. While the American Capital of Culture emphasises that *the involvement of civil society together with institutional consensus and the richness and variability of the cultural programme* are indispensable elements for the success of the candidacies.

Cultural governance as a horizon

The very notion of capital evokes the concurrence between territories by a position of centrality. Indeed, the different candidacy processes imply that some cities compete against others to obtain the award. However, shared capital and practices of cooperation and exchange between cities cultural capitals mitigate perverse effects and refer to polycentrality.

The governance of multiculturalism and urban heritage, the management of the city as a continent of a symbolic capital instituted, objectified and that should be available to all, and the current dilemmas of a public space (monumentality, nomenclatures) loaded with conflicting meanings configure from the city-territory new horizons of cooperation between Europe and Latin America and the Caribbean.

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⁴⁰ The project Banlieue European Capital of Culture 2028, a platform of the peripheries of more than 40 French cities that will present a joint candidacy to the cultural capital is part of the line of a counter-discourse in the face of the hegemonic cultural narrative of what should be a capital of culture.



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Forename(s), Surname(s) of the Speaker

Aylén Aviles

Title of the presentation: The systemic conception of cultural institutions: Museums and project dematerialisation as a result of the incorporation of new audiences and digital and analogue territories in pandemic. A review from the concept of entropy

Abstract

Museums have adopted the new museology as a method of connecting with their audiences. However, they have taken their building as a field of action, presenting proposals only for those who approach the museum. During the COVID-19 pandemic, they updated their practices to digital and analogue strategies to continue connecting with their audience, but according to audience studies, this summoned "new audiences" that made up between 50 and 80% of the audience.

For this reason, the need to incorporate mechanisms that dematerialise museums has been recommended, from understanding them as entropic systems that are based on general categories: the museum, design, and the connection with people. What are the dematerialisation mechanisms of the museum? How to project yourself to other territories?

Introduction

The years 2020 and early 2021 have left questions around the social and cultural practices that museums were carrying out in the context of the pandemic. The questions pursued an introspective criterion: Museum for whom? What role are we taking from the institutionality? This generated a debate that was postponed by the need to give answers that took the form of museographic proposals in order not to generate a content void in the pandemic. For the institutions this was challenging since they had to think beyond their spatiality and reach their audience through proposals without containment of walls and exhibition halls. Understanding the social role played by these institutions, it is pertinent to delve into how they have adapted to the new modalities imposed by the conjuncture and how to take advantage of the openings and possibilities that the context has provided. This research reaffirms the thematic relevance connected to the key concept of the visual communication field: the entropic system.

First block: Museum and Entropic Systems

Works, space, walls, showcases, projects, staff, people, public, posters, collection, frames, catalogues, proposals, samples, tours, rooms. The museum is a *whole* where it is possible to notice elements that make up subsystems and, in turn, the museum-system. Starting from this *whole*, why is a museum a system?

The inclusion of the term system in the universe of Design implied the irruption of a new concept in the field of practice. A concept that transcended the mere nomination of an object to provide a new way of thinking about design as know-how. (Mazzeo: 2017, p. 49)

Following the General Systems Theory proposed by Bertalanffy (1989) two typologies can be identified: closed systems and open systems, their difference and variability lie in entropy. A closed system is a set of elements that has reached a state of equilibrium, so its exchange with the medium is almost zero. An open system, on the other hand, *is defined as a system that exchanges matter with the surrounding environment that exhibits import and export, constitution, and degradation of its material components.* (p. 146). Entropy then, is a measure, is the quantification of the probability of order, that is, when the order is improbable, the system is in a state of imbalance, it is open.

The wholes and entropy

It is impossible to speak from the static totality of the entire museum, since it needs to be disaggregated to understand the dynamics that underlie its construction. Following this consideration, Mazzeo returns: *Thinking about systems today means thinking about complex, flexible, mutable and adaptable projects to the new communicational and contextual realities.* (p. 61)

It is necessary not to lose sight of the context of the system that is being used to open the way to mutability and the pursuit of order with little probability of success. Mazzeo, from the projectuality, unravels the staticity to make room for *the others wholes* who are in the environment. In this way it is possible to begin to think about the degradation of the material components of the museum, not in order to destroy the order, but to design dematerialisation.

Second block: System and dematerialisation

Cerezo Muñoz (2021) proposes a question, *what do we mean when we talk about dematerialisation? We talk about expanding its functions beyond its walls by recovering public space and expanding it throughout the territory...* (p. 82)

How does an institution dematerialise? And how is this dematerialisation designed? The answer is linked to the conception of the museum as a system and project. A simple analogy may be to think of a point of support.

A point of support represents: a three-dimensional space, the weight of an object, the action of a person deciding a specific location by nullifying all remaining location possibilities for an object. This gives an indication of an order. The relationship of that object to the context and its function (whatever it was) at that point of support determine the structure of that set. This structure adopts a spatial, objectual and functional materiality. What if we could offer points of support to the materialities involved in the museum?

Dematerialising Order / Designing Disorder

The museum as an entropic system will manifest resistance to the permanence of order and, in addition, it cannot only be a recipient of interactions with the environment, but must be deployed towards it in search of points of support. To what extent can disorder be designed, and order dematerialised? Dematerialising is a practice, an action that starts from a key point of support: materiality and its initial design stage is metaphorisation. There will be as many dematerialisations as

there will be metaphorisations. After the concept will appear the form, the proposal, the choice of real or virtual spaces, the spinning story, the role we will occupy, the visual codes that we will present.

Third block: System and digital and analogue territories

When it comes to dematerialising an open system, we talk about putting it in touch with the environment around it, taking a step from the inside out. While it is exciting and even radical to talk about dematerialising an institution, it carries with it a responsibility for where the system will be deployed, how its subsystems will adapt and how it will try to maintain order by controlling its constants and variables, that is, its different points of support. Because the building spatiality of the museum is an undeniably powerful and necessary territory, but it is not the only possible spatiality.

The others: towards digital and analogue territories and interfaces

Who inhabits the museum? Who doesn't inhabit the museum? How many works enter a museum? and how many people? The *others*, those who do not attend the museum, are oblivious to the practices that are carried out in the building, so that the institution that, according to its own definition must be of common good to society, is not. The *others* are the reason why the museum-system must be dematerialised and the spaces they inhabit are the points of support to review.

The Royal Spanish Academy uses these words to define the concept of territory⁴¹: *portion, belonging, sphere of action, concrete place*. Apparently, a territory has more limitations than openings, so why link it to the opening of the museum-system to promote its dematerialisation? Today the bidding is not between digitality or physical world, but both coexist. Therefore, it is of the utmost importance to return to the concept of interface and its capacity to transmit cultural messages (Bonsiepe, 1999), where the ultimate goal is to get something to people; therefore, it is permeable and versatile to different territories. Every interface needs a point of support and a territory or field on which to act. This can be taken up again, considering the territory a compositional field, where the designer does not start from scratch, but must use the context of that territory and the elements that compose it to integrate, at least, two discourses.

Conclusions

The analogy used about the possible points of support of a museum presents simplicity, but in it lies a quality that is that of being imaginable and projectable. If you think of a point of support such as the platform to be designed, it is understood by exclusion in the statement, that the context will not be designed – but will be chosen and studied. Projectual clarity opens other complexities linked to relevance. Because if it is possible to design as many points of support as you "want", in what way is

⁴¹ Territorio

From the Latin territorium.

- 1.m. Portion of the land area belonging to a nation, region, province, etc.
- 2.m. land (ll field or sphere of acción).
- 3.m. A circuit or term comprising a jurisdiction, official task, or other similar function.
- 4.m. Land or specific place, such as a cave, a tree or an anthill, where a certain animal lives, or a group of animals related by family ties, and which is defended against the invasion of other congeners.



their existence decided? Reaffirming, the design – and the decision-making of the thing to be designed – is part of a testing and evaluation process. The general orientation should consist in the understanding that there is an atomised museum that wants to dematerialise projectually, not capriciously but to take a leap in its social function: to reach the others.

This project step of cultural spaces and museums is relevant and scalable. Can a museum that is on a continent have a point of support in a foreign one? And without going that far, can the museum have different points of support in its neighborhood and city? Or in digitality? The pandemic has made it clear that it is time to go in search of new physical and digital points of support. It is time to give new forms to the contents and generate solid networks of entropy whose purpose is cooperation between regions to join the social duty of these institutions and democratise the cultural niches belonging to each one.

How many shared points of support between Latin America and the Caribbean and the European Union are there?

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Forename(s), Surname(s) of the Speaker

Oriana María Martinelli

Title of the presentation: First research experiences in the identification of landscape resources in Huacalera, Quebrada de Humahuaca, World Heritage (Argentina) (National University of Tucumán)

Abstract

Huacalera is a town in the Quebrada de Humahuaca, a World Heritage site in the Cultural Landscape category. Located in Jujuy, Argentina, it has unique functional - morphological characteristics that differentiate it from other settlements in the region. The exhibition aims to explain the research experience in the identification of landscape resources of territorial-urban scale as characterisers of the identity of Huacalera, within the framework of the EVC-CIN Student Research Grant. Methodologically we worked with analysis of land occupation, urban-rural structure, and functions. As a result, it seeks to express the relevance of Huacalera within the system of the Quebrada de Humahuaca, its morphological, landscape and historical importance.

Introduction

Huacalera is a town located in the Tilcara Department of Jujuy Province in northern Argentina. It is part of the Quebrada de Humahuaca, a site declared a world heritage site in 2003 in the cultural landscape



category. It is a small town located on the left bank of the Rio Grande, of great value for its landscape resources. The river has been the backbone of the ravine and structuring the territory for 10,000 years. It is a place where the various layers of time throughout history are expressed. It was a site of transhumance since pre-Hispanic times, and it was part of the Camino del Perú. Hence, this research can serve to articulate the recognition of landscape resources of other Andean peoples of Latin America.

The fundamental problem lies in the fact that, in the Quebrada, interventions are carried out without planning and without a prior survey of the place. Therefore, the results of these interventions are generally negative, generating an imbalance at the territorial and urban level since both are not understood as a system. And if an element fails, the system goes into disrepair.

The presentation aims to explain the research experience in the identification of landscape resources of territorial-urban scale as characterisers of the identity of Huacalera, within the framework of the EVC-CIN Student Research Grant. This research work will contribute to two projects. 1) PIUNT (research project of the National University of Tucumán): "Development of Instruments for the management of the cultural landscape in the Quebrada de Humahuaca, World Heritage", 2) PIP (multi-year research projects of CONICET): "Development of instruments for the participatory and sustainable management of the Cultural Landscape in the Quebrada de Humahuaca, World Heritage. The preservation of Purmamarca and its area of influence". The methodological procedures related to the collection of information and the analysis organised in five steps are set out below.

The research process: methodological procedures

In the research process, the collection of information was the first step. As for the reading of the corresponding bibliography, authors who spoke of Huacalera and the Humahuaca ravine were considered. It was followed by the reading of the cartography corresponding to the area of analysis. These were preliminary actions for the understanding of the conformation and configuration of the territory in order to gather knowledge prior to the two trips to the site to carry out field work.

The second step was the identification on the maps of the landscape resources that was complemented by the fieldwork. For the latter, a previous impregnation work of the site was carried out that consisted of a "non-systematised observation" which served to "detect the spirit of the place through contact with people and recognition of outstanding natural and cultural aspects" (Ferrari and Bruna, 2021). Next, a photographic survey of the landscape resources, visual basins, was made, information that served for the subsequent analysis of the site. During the second fieldwork, a systematised observation was undertaken together with the director of the research project that served to structure and complement the information.

In the third step, after having achieved the impregnation of the site and having obtained a clearer idea of its urban and territorial structure, the in depth, systematic and complementary bibliographic reading was continued. To do this, the information was uploaded into tables which allowed a book-by-book classification identifying relevant data that could contribute to the analysis of the site.

This process prior to the analysis allowed to have a global understanding of the territorial system of Huacalera. It was essential to be able to understand not only the elements that characterise the people, but how these elements interrelate forming a system. Having this understanding of globality, it was possible to carry out a pertinent analysis at the Formal, Functional and Structural level.



The fourth step was the use of a theoretical framework as a basis for the future analysis, which was comprised of: the information proposed by the team that directs the main project and the knowledge obtained personally based on the research work. One of the concepts handled was the concept of landscape resource, understood as "the singular linear or punctual elements of a landscape or group of these that define its individuality and that have a visual, ecological, cultural and / or historical value" (Conselleria de Territorio y Vivienda, 2006, art. 32). These resources were gathered in a matrix table in which all the constituent elements of the Landscape were raised, such as: Geology, Paleontology, Geomorphology and Topography, Hydrology, Flora, Fauna, Land Use, Communication Routes, Services, Urbanism, Architecture, Archaeology, History, Art, and Intangible aspects with their multiple manifestations, to which were added the visual basins and degraded views or perspectives to preserve.

The fifth step was the analysis of the town of Huacalera that was carried out based on the theoretical framework, translating the information into a territorial scale plan of the area to be analysed. The information focused on the following results:

- Formal Analysis: Identification of urban fabric in coexistence with rural fabric. Identification of urban and rural plot, blocks and parceling. Identification of resulting landscape and visual basins.
- Functional Analysis: Identification of functions and activities within the urban and rural fabric. Identification of land use patterns in relation to population behaviour patterns. Identification of landscape resources in relation to the matrix table. Analysis at the territorial level of the hierarchy of the constituent nodes of the system of towns and cities of the Quebrada de Humahuaca.
- Structural Analysis: Based on the form and function, the structure of the place was understood. Structuring elements of the natural environment: topography, hydrography, vegetation, landscape features, visual basins. Structuring elements of the built environment: urban and rural fabric and functions. Limiting elements: edges, discontinuities, barriers.

Conclusion

The research experience in the identification of landscape resources can be synthesised in five stages: 1) collection of information (bibliographic and cartographic reading), 2) Prior and in situ identification (fieldwork) of landscape resources, 3) bibliographic reading systematised in tables, 4) construction of a basic theoretical framework, 5) analysis of the town of Huacalera that resulted in three types of planimetry in which different analysis types of planimetry are identified: formal, functional and structural. In the future, the stages of diagnosis, evaluation and proposal will follow. The resources identified will be contrasted with the community through workshops at the level of a responsible team. In short, the greatest experience was that the process allowed to use the analysis to be able to have the understanding of all the constituent elements of this territory, thus understanding the globality and based on that knowing how to make a diagnosis that allows to develop guidelines to act in the future.

It is necessary and sometimes urgent to develop this type of experience, particularly in small Andean towns where there is sometimes a lack of trained human resources to carry out this type of

identification of landscape resources. Articulating this type of landscape recognition with other Andean peoples of Latin America can not only be an opportunity for international cooperation, but can also constitute a way to preserve the memory of the peoples through the use of non-complex records such as the matrix table, which is an important tool when planning.

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Forename(s), Surname(s) of the Speaker

Carlos Augusto Conde Gutiérrez

Title of the presentation: The Impact of the Implementation of the 1992 UN Convention on Biological Diversity and the 2010 Nagoya Protocol in Europe Union and the Andean Community: A Comparative Analysis

Introduction

The Andean Community has implemented the 1992 UN Convention on Biological Diversity (CBD) through Decision 391 of 1996. Particularly, the wording of the Decision 391 materialized the third objective of the CBD, i.e. “the fair and equitable sharing of the benefits arising out of the utilization of genetic resources” (Article 1 of the CBD), for the Andean countries: Bolivia, Colombia, Ecuador and Peru.

Although there have been important efforts in the Andean countries to materialize this objective, its implementation has been slow and, in most of cases, fruitless in terms of securing benefit sharing, particularly transfer of technology. It has also proved to be a regulatory burden for local researchers. On the other hand, the European Union in 2014 implemented the CBD and its 2010 Nagoya Protocol through the Regulation 511 of 2014 which has changed the rules for researching on genetic resources and traditional knowledge association with genetic resources in the Union. Yet, researchers have also complained of the effect of the Regulation in carrying out research on genetic resources and traditional knowledge.

This presentation aims to compare briefly both experiences of implementation of “fair and equitable sharing of the benefits” related to the use of genetic resources provisions in both jurisdictions. It particularly reflects on the experience of local research in Colombia, one of the four countries in the Andean Community, and impact reports of the EU to assess whether the implementation of the CBD and the Nagoya Protocol have improved “fair and equitable sharing of the benefits” arising of the use of genetic resources and traditional knowledge associated with genetic resources in the Andean

Community, particularly in Colombia, and the EU. This presentation is divided as follows: the first part explains the main provisions of the CDB, the Nagoya Protocol, the Andean Decision 391 and the EU Regulation 511. The second part analyses evidence in Colombia to assess the effectiveness of the Decision 391 in the Andean country. It also studies a impact report to evaluate Regulation 511.

The Text of the CBD, the Nagoya Protocol, Decision 391 and Regulation 511.

The CBD is mostly a treaty related to conservation and sustainable use of biodiversity (Glowka et al., 1994; Swanson, 1999). However, developing countries, particularly those rich in biodiversity, negotiated to include a third objective in the convention: “the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies” (Article 1). This was a trade off since provision on conservation and sustainable use of biodiversity would basically affect the use of natural resources on developing countries rather than developed ones (Swanson, 1999).

The third objective is developed in more detail in Articles 2, 3, 8 (j) and 15 of the CDB, and, subsequently, amplified and clarified by the Nagoya Protocol. The latter does not derogate from or amend the CDB; instead, it aims to clarify the Convention’s scope (Greiber et al., 2012). Article 2 brings the definitions employed including genetic resources. The term is fundamental as the third objective centers on the use of “genetic resources”. Article 2 defines genetic resources as ‘genetic material of actual or potential value’, while genetic material means ‘any material from plant and animal, microbial, or other origin containing functional units of heredity’. Eventually, the Nagoya Protocol adds two terms in order to clarify the scope of Article 2 of the CBD: ‘Utilisation of genetic resources and ‘derivative’ in Article 2 (c) and (e) of the Nagoya Protocol respectively. The former focuses on the different uses or utilisation given to genetic resources, for instance, in R&D for drug development processes. The Nagoya Protocol’s definition of ‘utilisation of genetic resources’ aims to clarify the definition of genetic resources so as to include not only the actual or potential value of genetic material (with functional units of heredity), but also the uses given to genetic resources.

The CBD also contemplates other provisions that develop the third objective. Articles 3 and 15 entitles countries the sovereign right to determine who can access their genetic resources and under what conditions. Yet, Article 15 also sets up minimum requirements to implement the CBD locally. These are (i) prior informed consent, including from indigenous and local communities (see also Article 8(j)); and (ii) how to reach an agreement with developing countries rich in biodiversity. But, Article 15 also allows countries not to adopt any of these requirements. For instance, developed countries such as Germany and the UK decided at that time not to implement these requirements at the national level. But as developing countries grew frustrated by the lack of national and regional legislation that would obligate developed countries to enforce the CBD in their jurisdiction, they pushed for a more comprehensive treaty (Buck & Hamilton, 2011; Correa, 2011). As a result, the Nagoya Protocol entitled developing countries to secure access and control of their genetic resources beyond their borders. Consequently, Articles 15 and 16 of the Nagoya Protocol calls on all countries members to adopt mechanisms of compliance to ensure that the use of genetic resources and traditional knowledge within their territory have been lawfully accessed according to CBD and the Nagoya Protocol in developing countries rich in biodiversity.

Having explained the basics of the CBD and the Nagoya Protocol, this presentation explores briefly the way in which developing countries such as the Andean ones, which host a significant world ethnic and biological diversity, have implemented the CBD. In the case of the Andean Community, its members have only implemented the CBD. There is no foreseeable regional initiative at the moment to implement the Nagoya Protocol.

First, Decision 391 is based exclusively on the concept of sovereignty over genetic resources (Articles 5 and 6). This means that the Andean Community law on access to genetic resources is subject to the sovereignty of states (Article 5). As a result, Article 6 of Decision 391 establishes that genetic resources are subject to a property regime in which Andean state members could ensure that those resources are not transferable.

Second, Decision adopts almost entirely the wording of Article 2 of the CBD on the definition of genetic resources. However, Decision 391 goes further, by including elements that do not contain functional units of heredity, such as by-products. According to Article 2 of Decision 391, by-products include any molecule, a combination or mixture of natural molecules, including crude extracts of live or dead organisms of biological origin that come from the metabolism of living beings. Regarding traditional knowledge associated with genetic resources, Decision 391 fails to include any definition regarding traditional knowledge associated with genetic resources. Nonetheless, Article 1 of Decision 391 brings a broad definition of communities, which includes indigenous, Afro-American and local communities in one concept, as a group whose own socio-economic and cultural conditions makes different from the “national collectively” and which are governed by its own costumes, laws and traditions.

The obligations imposed by Decision 391 also include important procedural obligations. Each Andean Community member must create a procedure under which users of genetic resources seeking to access those resources (which are broadly defined) must obtain prior informed consent, and secure mutually agreed terms. State members must appoint a local authority in charge of that procedure. For instance, in Colombia, the local authority is the Ministry of the Environment.

Meanwhile, as the Nagoya Protocol creates obligations for countries that are not necessarily rich in biodiversity, such as most of the European countries, the EU implemented the Nagoya Protocol through Regulation 511. This Regulation establishes two important elements to comply with the CBD and the Nagoya Protocol: (1) users and due diligence; and (2) measures of monitoring users' compliance. On the user and due diligence element, the Regulation requires users of genetic resources to exercise due diligence in order to comply with the requirements of the regime on access to genetic resources and benefit sharing and traditional knowledge associated with genetic resources. Due diligence is a mechanism to demonstrate that users of genetic resources have made the necessary efforts to comply with the regulation of access to genetic resources and benefit sharing.

The EU Regulation also establishes measures to monitor users' compliance. Each member state of the EU should establish a competent authority to oversee that users' generic resources comply with the Regulation and the Nagoya Protocol, as well as creating a focal point that provides information about the implementation of the regulation. It also creates disclosure obligations for public funded research.

The implications for research

The previous section explains the different obligations created by the implementation of the CBD and Nagoya Protocol for researchers, particularly, to obtain prior informed consent, reach agreements

with the country's host and communities (if there is any indigenous community associated with genetic resources), and ensure that local laws on access are fully met. This has led to extra burden for researchers in those countries to comply with those obligations.

In the case of Andean countries, particularly in Colombia, data from semi-structured interviews, local researchers and from market traders in two locations where medicinal plants demonstrate that, in practice, there is a fragmented implementation of the CBD in Colombia (Conde-Gutiérrez, 2021). In particular, the efforts to secure benefit sharing have targeted mainly local researchers creating a burden on carrying on research on genetic resources (Conde-Gutiérrez, 2021). Also, documentary information pointed out that there has been only one research with indigenous community that has led to benefit sharing agreement with the community (Goldstein, 2019). The total of agreements that does not involve ethnic minorities is 421 agreements (Dirección de Bosques Servicios Ecosistémicos y Biodiversidad-Ministerio de Medio Ambiente, 2022). This illustrates how little local researchers are interested in investigating genetic resources associated with traditional knowledge.

Meanwhile, the EU has reported that researchers have complained about the burden of researching on genetic resources. A 2020 preliminary analysis of the EU Regulation evidence the difficulties for researchers (MILIEU, 2020). First, the findings of the report point out that researchers lost resources and time on “scoping” whether developing and developed countries, where the research activity on genetic resources take place, have implemented either the CBD or the Nagoya Protocol. This has led within and outside of the EU to diverse approaches in the implementation of the international regime (MILIEU, 2020). As a result, delays and extra costs are which has conducted to “hidden cost” for research projects. It also has end up in a strategic disadvantage for EU companies and researchers as other developed countries such as the US and Japan have not implemented the Nagoya Protocol.

Conclusions

The comparative analysis of the Andean Community and EU demonstrates a difficulty in creating legislation that encourages research on genetic resources and traditional knowledge associated with genetic resources. Further research is required to find ways to avoid extra burden and costs for researchers in order to encourage further investigation that eventually could lead to fairer and more equitable benefit sharing arising from the use of genetic resources and traditional knowledge associated with genetic resources.

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Forename(s), Surname(s) of the Speaker

Joel David Montenegro Lanza; Angélica Leonor Ruíz Calderón

Title of the presentation: Agenda of intercultural life from the worldview of the livelihoods of the Mayagna and Mestizo peoples of the Mining Triangle, Northern Caribbean Region of Nicaragua, 2022.

Abstract

The intercultural life agenda is the result of research and development processes for the good life and common good of the Mayangna and Mestizo people. They characterised livelihoods and intercultural relations from their worldviews. Through community work based on prior consent, the agenda was designed with elements that generate development conditions with identity, self-management and common good. In addition, a methodological proposal was generated to strengthen results-oriented intervention actions with the peoples. The experience is a benchmark for good practice in multicultural contexts so that the peoples of the European Union can contribute to the agendas of life and the strengthening of the autonomous process of the original communities.

Introduction

Nicaragua is a multicultural and multilingual country inhabited by peoples in tireless search for peaceful relations and inclusive social development. This national characteristic makes it possible to conceive a nation that harmonises the best contributions of different cultures (National Assembly of Nicaragua, 2012), a declaration accepted by FILAC also for ratifying international instruments for indigenous peoples, constitutional rights and legislative norms that institutionally recognise the self-determination of peoples, their autonomy and their self-government.(2019)



Although progress has been made in terms of national policies and strategies, the conventional model⁴² of identification, formulation, implementation and evaluation of traditional policies that in their cycle assume cultural homogeneity is still being followed, making a superficial participatory exercise with multi-ethnic communities, causing incompatibility with their worldviews and livelihoods. This region with its ethnic diversity and deep cultural richness occupies approximately 46% of the national territory. Even in the historical conditions of marginalisation, it represents for the country 35% of the cattle herd, 23% of the total agricultural area, more than 80% of the forest area, 70% of the fishing production, 60% of the mining resources, 45 thousand km² with high potential for hydrocarbon exploitation and more than 700 km of coasts in one of the most recognised tourist areas in the world (GRUN, 2012).

Given the persistence of conjunctural conditions and dynamics that impact and generate transformations to the detriment of indigenous peoples, promoting a slow and systematic process of acculturation⁴³ that violates their cultural identity, knowledge⁴⁴ and self-determination in the definition of life agendas⁴⁵ for the worldview of the peoples as a reference instrument in planning at all levels of government, to promote synergies, harmonious coexistence, and facilitate conditions of development with identity for the self-management of peoples and good living.

The agendas of life as an instrument of self-management of the peoples must arise from the understanding of the means of life that promote the intercultural relationship between the Mayangna and Mestizo people. This multicultural context must be analysed from their interactions in correspondence to the common ties in the territory; at the same time recognising the different existence, diversity, worldview, and philosophy of life.

Livelihood Worldview

For the Mayangna people

There is no good living when the ancestral lands of the Mayangna people are invaded by settlers, however, although if there is housing and food for the family it is enough to live well. The common good is synonymous with "for all communities" when education in your own language, peace, and work is provided and granted access to.

The meaning of good living in the community has a feeling of its own worldview, it is understood in a well-being of personal peace, as well as good health, being able to provide for the family and its unity. The feeling of pride of the Mayangna identity is also complemented by the fact of not suffering discrimination, being accepted and respected.

Development with identity is understood as the transformations that the community demands within the framework of free and informed prior consent. The territory is a priority for the defense and use for the well-being of the Mayangna people, therefore, the actions of exploitation by third parties are

⁴² As Roth puts it (2007).

⁴³ According to Chavarría y Castillo (2018).

⁴⁴ According to Peralta and Indalicio (1996).

⁴⁵ Cunningham (2010) mentions characteristics of life agendas from the indigenous vision of good living: their worldview, the economic subject is collective, the role played by their own economic institutions, intercultural relations, gender equality relations and intergenerational relations.

not conceived as development, but as exploitation, in this sense the territory must be administered by the community and its authorities.

The natural capital is its lands, its territory is its greatest wealth, the Bosawás Biosphere Reserve, the rivers are considered the soul of the territory, the trees, the biodiversity, the natural landscape, all as a living being that connects the identity and ancestral tradition of its native livelihoods promote respect for mother earth.

Social capital is the trust that people have for community organisations to achieve benefits for the community itself and solve vital needs through their management. Among the assets of physical capital is land, as the main means of life for today's survival. It is the life support of the community, and the source of resources.

Cultural capital in principle consists of intangible goods such as the mother tongue, oral history and the collective memory of the Mayangna people, others that constitute ancestral knowledge, traditions and customs in their ways of life, includes the action to rescue the practices of identity and originality, the practice of Mayangna identity has been combined with the cultural practices of the Miskitu people mainly by language, and the economic, commercial and way of life practices of the Mestizo people.

The leadership that is recognised by the community is considered human capital, these leaders are the reverends or pastors of churches, midwives, folk masseurs, rangers, nurses, teachers, communal judge, communal syndicate. This capital is revitalised with the practice of the values and principles of its spirituality, its knowledge, and its ancestral traditional contributions.

For the Mestizo people

Good living implies a perspective of individual well-being, while the common good implies a collective perspective for decent living conditions for the community. There is development with identity, when working with and for people in a participatory, voluntary, and proactive way, the result must be the improvement of people's livelihoods, and promoting the culture of reciprocity, solidarity, balance, respect and collectivity among the different peoples that coexist in the region.

Natural capital understands the abundance of natural resources as an economic potential, but its rational and careful use must be fundamental to ensure the lives of the next generations. Social capital is the concrete result of community work aimed at transforming from the social the processes and management linked to the well-being of people in an integral way, while cultural capital means the intangible heritage of grandparents on good coexistence, faith, mutual respect, and good family customs.

In the community worldview of human capital, the intrinsic value of the human being, the value of life, what they think and do, whether good or bad in this sense the quality of the person we are and how we feel is conceived. It is enriched by the professional and wisdom skills that people have.

Physical capital at the family level is the material wealth accumulated through labour, comprising the farm, means and factors of production. Financial capital is perceived as the economic resources, and the direct means to generate them. In the community the financial capacity rests on agriculture, livestock, and trade, they are the main means of life, others in an antagonistic way are the provision of services, sale of labour, artisanal mining, trade of forest resources such as wood, game meat and fishing.



The meaning of the livelihoods of the Mayangna and Mestizo peoples highlight the elements that constitute the agenda of life, natural and cultural capital are identified as priorities, as the values of their own identities that characterise each people. Social capital combines community action and the real effort of allies. Human and financial capital is related in terms of the dreamed living conditions and the individual and collective capacities that lead to good living and the common good.

Conclusion

From the University of the Autonomous Regions of the Nicaraguan Caribbean Coast (URACCAN) this experience is a reference that assumes a theoretical, methodological, and holistic practical vision based on the worldviews of the original peoples, which assumes the interrelations, links and the common that unites the peoples. Within the scope of this research and in order to boost relations between Latin America and the Caribbean with the European Union, cooperation is urged through interventions that could be carried out by the peoples of the European Union in the region through free and informed prior consultation, in a scheme of co-management, self-governance, complementarity with an intercultural gender perspective, these are some elements that increase the relevance, impact, scalability and sustainability of their actions.

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Presentation of Networks and Collaborative Projects

Forename(s), Surname(s) of the Speaker

Aurora Lechuga Rodríguez

Network Title: Kairós Young Researchers Network



Presentation

The Kairós Young Researchers Network (Association of Higher Education Communities (HE)) is based on collaborative work and the sum of the strengths of the participants at the multi-institutional, multi-country, and multi-regional levels. It promotes the fluid exchange of experiences, analysis, and proposals for solutions in favour of transformative social action.

The Network will have young catalysts of change, for the specific purposes that we pursue in Kairós, where the vision of promoting young people, collectives in general, from various parts of the world to develop personally and professionally through a relevant, quality, inclusive, purposeful education is produced.

The Network focuses students on the decision-making structures of higher education by enabling the factors that have been shown to most influence students' ability to create change in the institutional and national spaces of higher education.

The Network promotes cross-cutting research favoured by a south-south-north mobility regime for student exchanges. It encourages joint participation in international calls for collective and research projects.

Members:

We have 30 higher level and postgraduate research students from public, activist and private universities, accompanied by experts in the respective topics, as well as groups of young activists.

Extension:

The Kairós Young Researchers Network is a hotbed for a global network of young researchers and operates horizontally. We have representation of young people in Latin America and the Caribbean, in Europe and Africa, lacking reaching other continents such as Asia and Australia.

Lines of research:

The lines of research detected in our network are interdisciplinary: Environment, violence, gender, all kinds of arts, higher education, sciences, technologies, innovation, augmented reality, training of researchers, applied mathematics. (Among many other lines).

Ways to collaborate: With workshops, seminars, academic exchanges, co-creations of global projects, contribution to the promotion of research.

Contact persons: Kairós Coordination: Dr Annette Insanally. Coordinator of the Chair of Caribbean Studies (AUF-CORPUCA) annette.insanally2@mail.com

PhD student Aurora Lechuga Rodríguez (Participant of Unesco-GUNI Chair: "University and Regional Integration"- directed by Dr Didriksson). aura_lechu@yahoo.com.mx , Teacher Linayme Paulette Reyes. redjoenkairós@gmail.com

Website: kairós (In preparation, space where each young person will present a brief profile, their lines of research and their contact details).

Forename(s), Surname(s) of the Speaker

Daniel Alejandro Rossit

Title of the Network: Ibero-American Network of Industry 4.0

The Ibero-American NETWORK of Industry 4.0 has as its work objectives:

I) Generating an Ibero-American network of universities and companies to achieve exchanges of scientific and technical knowledge of mutual interest between the academic and business fields, which allow contributing to the implementation in SMEs of technologies and solutions of Industry 4.0.

II) Developing new management technologies and decision support systems that combine techniques from different areas of knowledge (Operations Research, Informatics, Big Data, Artificial Intelligence, etc.) to solve complex problems in real scenarios and with operational, technological and economic criteria.

III) Developing a plan for the use, transfer and dissemination of the results obtained within the network, both at the academic and business levels.

IV) Facilitating the training and specialisation of human resources. This will contribute to the training of trainers (within universities and companies) in Industry 4.0 topics.

Member Groups: Universities of Brazil (UFRGS), Colombia (Universidad de la Sabana y de los Andes), Uruguay (UDELAR), Chile (Universidad de Santiago de Chile), Spain-Canary Islands (ULPGC), Argentina (Universidad Nacional del Sur), Peru (Universidad de San Agustín).

Another member is the Industrial Union of Bahía Blanca (Argentina), an organisation that brings together more than 250 companies. As well as the Technological Corporation of Andalusia (Spain), which is an organisation aimed at linking academia and companies.

The Network is funded by CYTED.

Main activities carried out:

- Student research and exchange visits, generally following a work agenda aimed at developing research on Industry 4.0. Within these activities, some students have been able to develop thesis projects to obtain their undergraduate degrees. These projects consisted of developing tools for decision making in Industry 4.0 and Cloud Manufacturing systems. These projects were mentored internationally.
- Capacitations in each of the universities, dictated by members of the other groups.
- Technological Linkage Days: seminars were held, in which most of the attendees corresponded to the industrial and professional sector.
- Results obtained so far:
- Scientific publications: conference papers, special publications, book chapters, publications in indexed scientific journals
- Undergraduate students have achieved publications: in international congresses, book chapters and scientific journals.
- Collaboration agreements with organisations.
- New linkages and joint projects between the different groups of the network.

Proposal:

If there are students (Bachelor's, Master's or PhD degree) interested in working on Industry 4.0 issues, they could participate in the Network, and make stays in some of the participating groups. The Network could provide part of the funding required for the transfers and/or maintenance of students.

Forename(s), Surname(s) of the Speaker

Zully Johana Rodríguez Parra

Network: Society of Doctors and Researchers of Colombia, SoPhiC

Abstract

The Society of Doctors and Researchers of Colombia - SoPhiC, is a non-profit trade association. Created in 2020 by a group of nine women and four men, all doctoral students and / or doctors of Colombian nationality, residing in the country and abroad, with diverse profiles, histories, and origins.

They were motivated by the idea of generating spaces and networks for the exchange of knowledge to improve the conditions for doing science and influence the reduction of gaps in scientific and academic practice in Colombia. It is therefore an organisation that seeks to integrate from different areas, researchers from all academic disciplines, both nationally and internationally, to generate social, economic and scientific impact.

To date there are more than 280 associates, of which about 20% live abroad impacting other latitudes of Latin America and Europe, strengthening the scope of the organisation. Researchers from all areas of knowledge can be linked in four categories 1) Doctors, 2) Doctoral students, 3) Corresponding - researchers in general and 4) Institutional agreements.

SoPhiC projects itself in the creation, strengthening and maintenance of international relations for the benefit of researchers, through alliances, management of internships and exchanges, funding opportunities and inter-institutional collaborations.

Among the benefits for associates we can mention carrying out Science and Technology activities endorsed with InstituLac, organising knowledge transfer events, congresses, workshops, seminars, web series, consultancies and training in different areas, the possibility of working in networks as a trade association of researchers and the dissemination of knowledge through its own editorial platform.

An example of this was the First International Congress SoPhiC 2021 "*Science at the service of Society*", which included the presentation of 8 keynote talks (3 from Colombia and 5 from abroad), 6 thematic tables, 120 papers in oral and posting mode (86% from Colombia and 14% from abroad) with the participation and support of 10 entities from the academic and scientific sector. Event that brought together hundreds of professionals, graduate and undergraduate students, research hotbeds and social and political groups.

SoPhiC has created two research groups in large fields of knowledge: Natural Sciences and Engineering (BIOGRID) and Social Sciences and Humanities (SOCIALGRID), through which projects, financing and the link between associates are managed.



Since its recent creation, SoPhiC has been developing cooperation agreements with institutions such as the Ministry of Science, Technology and Innovation Minciencias, public and private Higher Education Institutions in Colombia, and entities such as the Innovation Technology Park (Tecnicafé), the *Parent in Science* Colombia movement, among other organisations that are part of the ecosystem of generation of new knowledge.

The closest objectives include achieving the second version of the SoPhiC congress, carrying out knowledge dissemination events with emphasis on citizen participation, consolidating the portfolio of doctors and researchers and promoting publications with their own editorial seal.

In short, SoPhiC is a space that belongs to everyone, and to which those who are knowledge managers are cordially invited. It is intended that this organisation constitutes an example for Colombian society of collaborative and articulated work, where the power of science and human quality are found in one place.

<https://www.sophicol.org/inicio/> website

Facebook: <https://www.facebook.com/SophiCol>

Twitter: <https://twitter.com/SoPhiC>

LinkedIn: <https://www.linkedin.com/in/sophicol/>

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Forename(s), Surname(s) of the Speaker

Carina Diocelyn Meza Ramón

Network: Research Center for International Affairs (CENTRA)

The Research Center for International Affairs (hereinafter, CENTRA) is an initiative born from the members of the International Studies Workshop "José Luis Bustamante y Rivero" of the Universidad Nacional Mayor de San Marcos. Currently, we are a non-profit civil association; autonomous academically, normatively, and administratively. Our character is that of a Research Centre dedicated to establishing a research community that produces, develops, and promotes international studies through research, teaching and interdisciplinary analysis in this specialty, in order to serve as a focus of thought for critical analysis that is useful for different public and private institutions, social agents and academic referents. In this way, we seek to contribute to a better insertion of Peru on the global stage. There are several ways to be part of our project, we currently have volunteer programmes for our areas, as well as research projects, and furthermore, we have forms of collaboration for national and international people and organisations.

One of the institutional objectives is the exchange between the regions of the world, among them, we consider the relationship between Latin America and the European Union as a potential generator of changes between our countries. Some of the topics as generators of exchange are international cooperation, international relations, research, and teaching. Currently, we dedicate part of our research to study the relations between EU-LAC, we also promote cultural and student exchange between the regions for our professional development.

Forename(s), Surname(s) of the Speaker

Fernando Gregorio Espinoza

Network title: Research Network of Crops of Economic Importance in Ecuador (REDICIE)

REDICIE is a network that aims to unite researchers from agricultural sciences and agribusiness, with the aim of generating research and knowledge exchange with the support of strategic allies, for the improvement of the production of traditional crops or the search for new crops that represent a viable alternative to be incorporated into production providing new opportunities to producers.

Institutionally it is supported by the Faculty of Agricultural Sciences (FACIAG) of the Technical University of Babahoyo and other organisations dedicated to agricultural research. It has the human, technical resources and the properties extending on 254 hectares of the FACIAG, where research can be carried out for the adaptation of new crops, promoting eco-efficient agriculture aimed at improving competitiveness to achieve levels of sustainable productivity and much more.

The REDICIE seeks to: establish strategic alliances with other networks or research groups of different Institutions or Organisations to increase the multi, inter and transdisciplinarity, with the purpose of achieving the consolidation and visibility of the NETWORK; manage the submission of Research, Development and Innovation proposals (I+D+i) in tenders offered by co-financiers, national and international institutions; promote the exchange of researchers and experiences, as well as the organisation and participation in national and international congresses. At the same time, scientific intellectual production is generated such as articles, books, book chapters, patents, among others and the transfer of results for the benefit of producers and other actors in society.

One of the new crops proposed in this recently created network is the production of hemp and its derivatives, in which there is great interest and expectations as an alternative to mitigate the economic crisis that rice producers in the province of Los Ríos are going through due to overproduction, low prices of the product and affectation in the entire agro-productive chain that affects their economy and living conditions of families. The studies and exploitation of industrial or medicinal hemp are of recent approval in the country, so all the results of this research are novel and of great potential. This study will allow obtaining a database for the cultivation of hemp adapted to the climatic conditions of the Ecuadorian coast and thus have validated results and technical manuals for those who are interested in the cultivation of hemp.

The objective is to study the agronomic behaviour and the physical-chemical composition of industrial hemp. As specific objectives of this study we propose: To study the germination process of industrial hemp seeds under greenhouse; Determine the agronomic variables of industrial hemp cultivation in its different vegetative stages; Analyse the physicochemical components of vegetative structures.

Biomass not used in research will be studied for its composition and potential for possible use.

The fragile economic situation of the agricultural sector after the COVID-19 pandemic, the effects of climate change, such as droughts in some places and increases in rainfall in others, producing floods, is what has motivated us to create REDICI, and develop relevant research on crops of economic importance to contribute to the rebirth of the agricultural industry in the region, the country and the world; seeking that innovation in production represents an opportunity that can change the social, economic and environmental reality of many people.

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Forename(s), Surname(s) of the Speaker

Daniela Ruiz Urrea

Network Title: Research Hotbed in Literature: Women and Literature Line

I am a Hispanist philologist in training at the University of Antioquia and a practitioner of the research group Colombia: Traditions of the Word. The network that I will present to you today is part of this research group and bears the name: Women and Literature Line of the Hotbed of Research in Literature. It was created in the first semester of 2017 and, in its beginnings, was composed of only 4 women who dedicated themselves to studying Colombian writers of the nineteenth century.

A peculiarity of the hotbed is that its interests of study and operation depend mostly on the members. The professor and researcher Ana María Agudelo, who is the one who has led it, has always left us the freedom to give it the direction that interests us within the limits of women and literature, which are quite broad, so that over time and with the passage of different members have transformed not only the focuses of study, but also the products that are generated from research.

The first two years were oriented to the study of Colombian writers of the nineteenth century in resources such as the press of that time. In the first semester of 2019, the period in which I entered, we focused on studying the question of whether there is what is called female writing, so we refer to works by theoretical women that address the subject. In the second half of that year, we did research on the women who were part of the literary system (writers, columnists, translators, editors, etc.) in Medellín during the twentieth century. At the beginning of 2020, before the health emergency, we read and studied Latin American writers of the last century; to make them visible we collaborated with a bookstore that focuses on women writers and together we created collages of each writer we studied, we chose a quote that would be read and a small biography of the author. In the end, the result was published on the bookstore's social networks. With this collage initiative, in March 2020, we made a commemorative mural in the Faculty of Communications and Philology of the University of Antioquia, which still stands today. An important fact to highlight is that despite the contingency the hotbed did not stop meeting, but to alleviate the academic burden and provide us with tranquility and company, we held for several months video meetings where we addressed the lives of women writers and their works. At the beginning of 2021 we continued to meet virtually to study together Latin American writers of the late twentieth century. By the middle of last year, we were already a hotbed with nine regular members meeting every two weeks.

After these processes that made a critique of the invisibility of women writers in the literary system and in academia, the hotbed began to take on a more political tint where we explicitly tend to support Goal 5 of the SDGs that focuses on gender equality. Therefore, in August 2021, we presented ourselves and passed the call for Welfare of the University with the project of a podcast called *A microphone of our own*, which aims to denaturalise everyday gender violence using literature as an aid to talk about issues that are complicated.

We are currently finishing the first season of the podcast and, due to the publicity that this project has given us as a hotbed, we are summoning more people to continue nurturing the hotbed with new perspectives and objects of study. Contact:



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Intern and speaker: Daniela Ruiz Urrea daniela.ruizu@udea.edu.co

Forename(s), Surname(s) of the Speaker

Juan José García Rebollo del Río

Network Title: International Center for Animal Law and Policy (ICALP)

Presentation

The ICALP is an interdisciplinary centre that integrates social sciences, humanities, health sciences and animal welfare sciences in order to carry out actions aimed at achieving a paradigm shift in human-non-human relations based on exploitation and abuse, giving way to new interactions based on unrestricted respect for our inherent rights, for the benefit of the sentient collectivity. In this vein, among the main objectives of ICALP are the following:

- Placing other animals in a legal category different from the one that currently afflicts them, which is that of *things* or *livestock*, in order to be able to consider them as subjects of law with their own interests.
- Position animal welfare as a commitment within sustainable development, since animal exploitation and its instrumentalisation are the main causes of environmental deterioration and the emergence of zoonotic diseases.
- Promote studies in cross-sectional areas that explore the human-non-human relationship, to generate proposals that aim to improve the experiential well-being of the sentient community.

To achieve these objectives, ICALP frequently holds congresses, conferences and research clinics on various topics related to animal law, in which professionals from all over the world participate, given its multiple alliances and collaboration agreements with universities, foundations and research centers spread throughout Europe, Asia and America.

It also has an indexed journal founded in 2009 dedicated to interdisciplinary studies on human-animal relations. The magazine *dA. Animal Law* is published since 2017 in open access format under a *Creative Commons* licence, in order to disseminate original research and scientific work related to animal law. Publications in electronic format can be consulted at the following link: <https://www.derechoanimal.info/es/revistas/da>

On the other hand, the ICALP has a database with exhaustive information on legislation and international jurisprudence on animals, which can be consulted at the following link: <https://www.derechoanimal.info/es/basededatos>

In addition, Dr Teresa Giménez-Candela, Director of ICALP, has managed to train professionals of high academic and professional level through the Master in Animal Law and Society, which is taught at the Autonomous University of Barcelona and is part of the centre, which can be taken in person or online.

In this regard, it is important to recognise that a large part of ICALP's achievements have been the result of international cooperation and its strong relationships with prestigious institutions around the world. Therefore, its vision of global expansion of animal law and other subjects related to the welfare of the sentient community has resulted in the formation of a multicultural and interdisciplinary



academic community committed to the objectives of the centre, whose growth and number of members is constant.

For more information related to how to be part of the ICALP, present publications for the journal, participate in congresses, webinars or get involved in the Master of Animal Law and Society, I share the following contact details:

Website: <https://www.derechoanimal.info/en>

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Forename(s), Surname(s) of the Speaker

Daniel Calbino Pinheiro; Gabriela Moreira Moreira Lima

Title of the network: "Fake News and pandemic"

Presentation

The concept of Fake News, understood as news (from social networks and / or traditional media) that are presented as legitimate sources of information, but that are deliberately invented and promoted to confuse readers with ideological and / or profit intentions, is not a new etymology.

In 1925, the American magazine Magazine Harper published an article, entitled "Fake News and the Public", in which were described the ways of technology and the difficulties in separating rumors from facts. If at that time newspapers, magazines and radios were a fertile field for disinformation, almost a century later, with the internet, with the use of cell phones and social networks, the virtual environment has become a facilitator for the spread of fake news.

The current conditions, characterised by digital media that allow the production of content at low cost, that is, the proliferation of free online news sites, have increased the generation of information and the speed of circulation never seen before. To this is added the decline of trust in traditional journalistic media, the use of social networks as the main ways of searching for information, the deliberate use of "bots" and fake accounts that manage to spread false content massively and, in a few seconds, which puts Fake News on another social level.

In the 2018 presidential election in Brazil, a fake video insinuating an erotic bottle distributed in schools across the country had more than nine million views (POMPEU, 2018). Similarly, during the first year of the COVID-19 pandemic, 25% of the most viewed content on the subject on Youtube presented fake news, which totalled 62 million views in the period (ROOZENBEEK et al, 2020).

The consequences of exposure to Fake News indicate that individuals are not only misinformed, but also generate damage to social life. In surveys, people more likely to believe in Fake News tend to adopt less civic attitudes, to discredit public health institutions and the electoral mechanisms of democracy, which reinforces the need to combat them.



It is in this scenario that the present proposal of the consortium consists of the elaboration of a network of young researchers interested in investigating the impacts of Fake News on the process of adherence to vaccination and COVID-19 health measures. In methodological terms, it is proposed to carry out quantitative and qualitative research that explores the reality of the countries of Latin America and the Caribbean, since much of the international literature addresses the empirical dimensions from the global north axis (United States and Europe). As a result, it is proposed to generate scientific data that allow us to understand the dynamics of production, propagation, and consequences of Fake News, based on the analysis of its similarities or singularities with the research already carried out on the subject in the countries of North America and Europe.

Finally, we highlight that research is among the hot topics on the international research agenda. In 2021, the two Nobel Peace Prize laureates were journalists who developed virtual platforms to combat Fake News. In the academic field, in the Web of Science platform, in the last year more than 1,100 articles were published, which puts the proposal of this network in line with trends and with the potential of publications in journals with relevant impact factor.

Keywords: Fake News; COVID-19; Latin America; Caribbean.

Interested in being part of the network? Contact us at: dcalbino@ufsj.edu.br

Dialogue among participants on common interests and possible future collaborations

Forename(s), Surname(s) of the Speaker

Carlos Emilio Orellana Fantoni

Title of the presentation: Creation of an international dataset to collect the testimonies of young researchers from the EU and LAC

Abstract

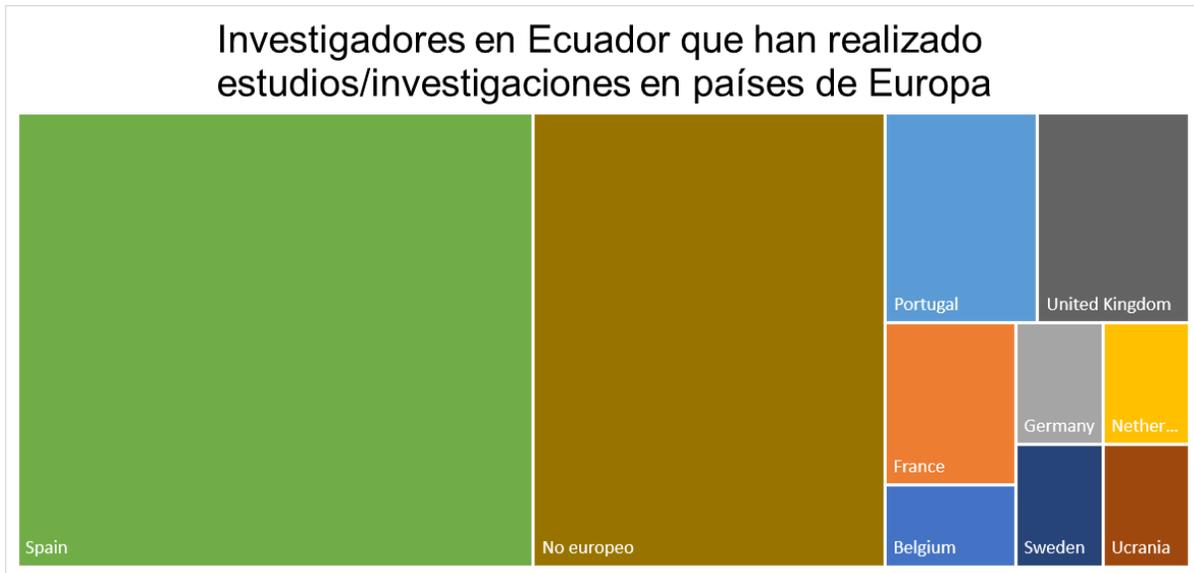
The opportunities in Latin American countries are not many in terms of research. The main references in this field are mostly institutions that are located on other continents, which is considered by many the cradle of research. It is proposed to generate an international dataset that can be used in the joint strategic efforts of EU-LAC to achieve the objectives of the EU-CELAC Joint Initiative on Research and Innovation (JIRI-SOM) from the young researchers participating in the Young Scientists's Networks Days. The proposal is aimed at meeting the objective "Cooperation in research infrastructures" of the roadmap.

Introduction

The task of a young researcher is very simple and at the same time very complex: to find a research topic of interest, to dedicate themselves to scientific production in relation to it, and to disseminate the findings they have found. And it is complex precisely because the path and the decisions they make regarding this goal depend on many factors that consider them all at the individual level is an almost

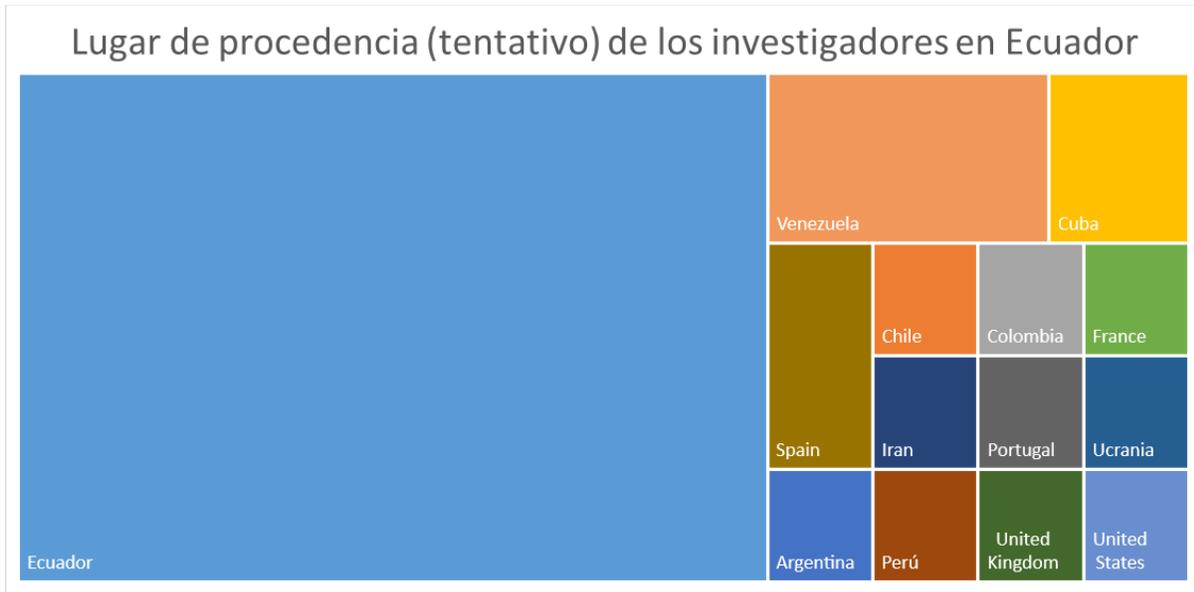
impossible task. Hence, it is decided according to the information that is at hand and with respect to the personal experience of each one.

For young people in Latin America, the optimal path at first instance turns out to be to go abroad, especially to European countries considered the cradle of current research. In Europe there are important research centers such as CERN in Switzerland or CNRS in France, so the idea of being able to go to these sites is attractive to these young people. Using Scival's tool, when looking at the top 50 researchers in Ecuador⁴⁶, the vast majority have conducted study or research in a European country.



However, when reviewing instead the country of origin of these researchers, we can note that almost half of these are not of Ecuadorian origin, with less than 16% of these from Latin America. In a certain way, this goes against the proposition that a researcher will always seek to develop in First World countries, because if this were the case, why would foreigners come to a Latin American country to research?

⁴⁶ Scival is an Elsevier tool, which indexes publications on a global scale. The top 50 researchers were generated based on the number of publications made between 2016 and 2021



With this in mind, it becomes clear the need to know and understand the testimonies and points of view of researchers both in Latin America and the Caribbean and in Europe, so that it is understood what our researchers are looking for and how this can be provided to them in a better way. This presentation proposes the implementation of an international dataset that collects the testimonies, contexts, and other factors that young researchers associated with EU-LAC take into account with respect to the trajectory they will take in the world of research. This dataset would also be used in EU-LAC's joint strategic efforts to achieve the objectives of the EU-CELAC Joint Initiative on Research and Innovation (JIRI-SOM).

Background

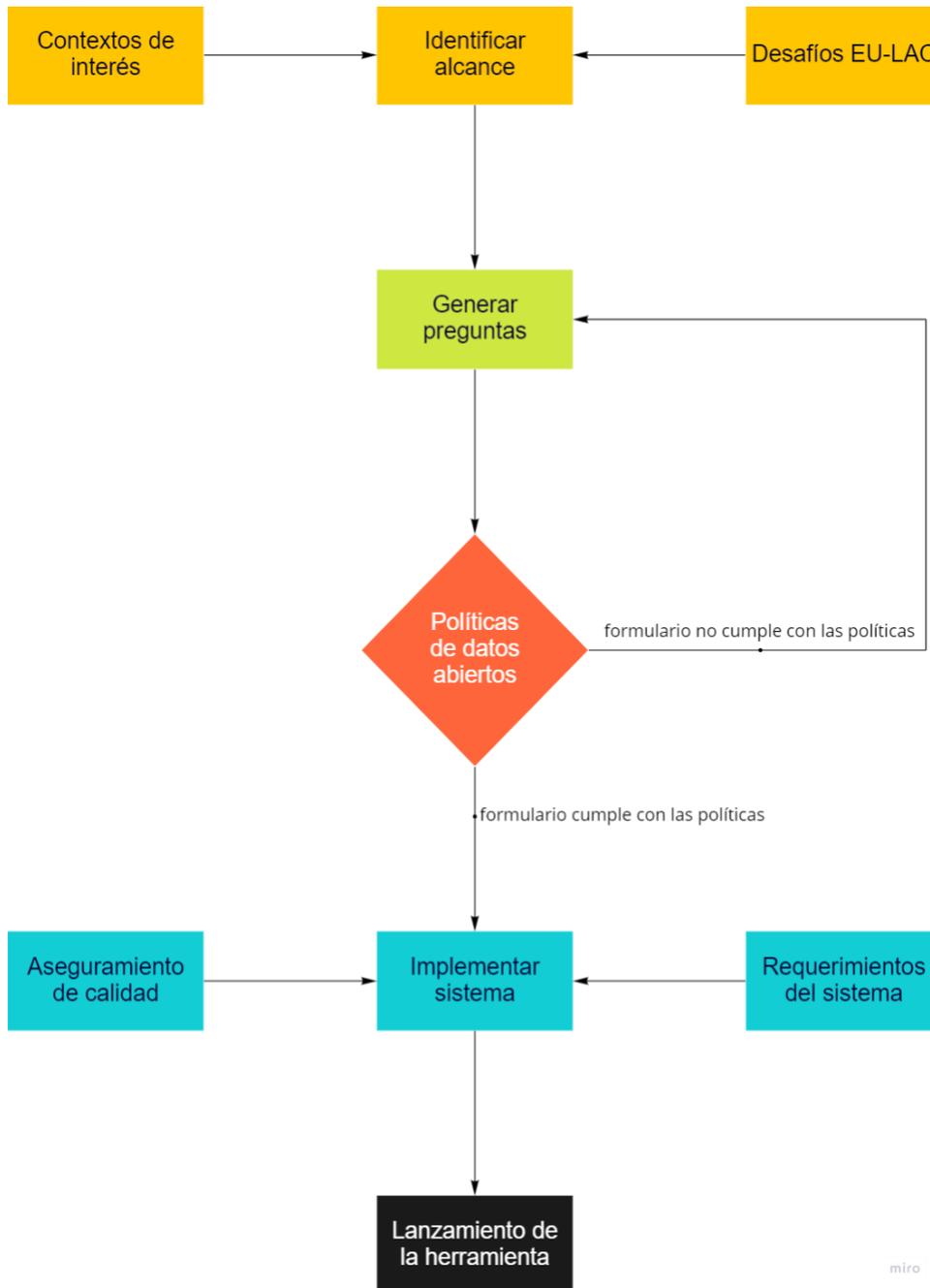
Collecting research-related data for decision-making is not a new concept. Berman (2010) proposed for example to generate a "Census of Research Data" based on the censuses conducted in the US in 2010 in order to assist in the allocation of funds from federal research and development agencies. His proposal was aimed at providing a quantitative reference of the research data landscape at any given time, and focused on optimising the designs, availability and scope of elements such as repositories and digital services frequently used in the field of research. The study by Battiston et al (2019) was instead aimed at scientific production as such, describing the scientific trajectories of approx. 130,000 physicists within the area of Physics, finding that the vast majority of these began their trajectory in 3 sub-areas of Physics in particular, and migrating to other subareas as they develop more in their career. Likewise, the importance of their findings for the development of resource allocation policies is noted, as well as for students and young researchers in the dynamic changes that occur within this field. There are several studies that have been dedicated to the creation of datasets. Long et al. (2021) proposed a methodology for the creation of reference datasets for remote sensing of image interpretation, where the challenges that this field of study had at the time to implement general

guidelines that should be followed in the creation of these datasets were analysed. This ensures the efficiency of the dataset formed, so that it meets the objectives established by the research being carried out. Chi et al (2019) for their part sought to create a dataset of prices of residences in the United Kingdom that was more detailed than the official dataset of this country, which lacks geolocation and accurate information about the area of residence. In their proposal, this added value was generated by linking the official dataset with survey databases that contained the missing information.

With regard to EU-LAC, many of its efforts related to the area of research among the countries that make it up lead to the need to create a dataset of this nature. A report on the status of the CELAC-EU Action Plan (EU-CELAC, 2020) makes clear the need for the Working Group to highlight "the strategic role of open access to data as a catalyst for free and open collaboration between the two regions and as a key contributor to better science". Generating this EU-LAC dataset of researchers would therefore contribute to the development of the pillars "Research Infrastructure" and "Mobility of researchers", by helping in the future development of tools that encourage joint work between both regions. This is also not an alien issue of the organisation, because in the past it has already created tools with similar scopes. MAPEO (EU-CELAC, n.d.) for example is "a database that brings together information from more than 1,500 public and civil society organisations that have an agenda related to the priority issues of the Strategic Partnership between the European Union and Latin America and the Caribbean." This tool fosters knowledge and mutual collaboration between organisations from countries belonging to the two regions. However, the creation of this database occurs at the organisational level, but not at the individual level. The proposal could therefore be used in conjunction with this, or other tools already implemented by EU-LAC to give added value to their consultations.

Methodology

The procedure to be followed is divided into 4 stages:



Identifying points of interest

Before starting to design a form to create this dataset, the scope that it is going to have must be specified, that is, to what extent the testimony and context of the researchers are of interest. Some possible points of interest are:



- Demographic: place and date of birth, sex, nationality, current place of residence
- Academic background: relating to the education of the person
- Socioeconomic: social status, beliefs
- Political: ideologies of the person and their country
- Professional level: work inside and outside the research

For this step, the most appropriate thing would be to have a team of experts from EU-LAC in accordance with the EU-CELAC Joint Initiative, who are the most suitable when defining the approach that this dataset should have. As a result of this stage, there must be well-established objectives that the form designed must meet.

Generate questions

Once the scope of the dataset is defined, the form that will be used to create the database is generated. The questions of the same must go hand in hand with the considerations of the previous stage, considering that, if you decide to create this database as an extension of the MAPEO tool or any other of the available tools, the structure of the same can be related to these to generate more efficient results.

For this stage it is also important to have an experienced team in terms of the design of the EU-LAC databases, even more so if it is planned to link the results with the existing databases.

Review open data policy

As this is information that will be destined for public use, it is important to take into account that the data resulting from the survey agree with the open data policies under which EU-LAC is governed and its digital tools. Procedures such as the anonymity of the individual's personal information, like their name or identification documents, are usually basic when making this information available to the public.

If the questions asked do not comply with the open data standards and policies, it is necessary to open providing this feedback with the team of the previous stage, who will have to rethink the questions until full compliance with these policies is achieved.

Implement System

Once the form is approved, it must be implemented and the database resulting from filling it out. At this stage, several work teams would be necessary. First, a software design team is required to implement the web platform where the system will be hosted. Considering that EU-LAC has created similar tools before, accommodation requirements can be implemented based on what was previously designed. It is also advisable to have a system quality assurance (QA) team that works together with the team in charge of implementing MAPPING if the possibility of linking both tools is considered.

Conclusion

The existence of the EU-LAC Foundation opens a great opportunity in terms of joint efforts between the two regions. And although there are already tools available to its researchers, a level of granularity such as the one proposed here would open even more opportunities, not only for research topics, but

to know the reality of each of our young researchers. The way is therefore clear in creating a situation in which everyone in the two regions is aware of all the possibilities they have in their course as researchers, and this dataset is the beginning for it.

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March 18th, 2022 - Closing session

Dr **Anna Barrera** opened the closing session by thanking the organisations and university associations that promoted and contributed to the organisation of the event (**ANUIES, ASCUN, AUGM, CSUCA, ENLACES, EUA, EU-CELAC University Council, FAP-ALCUE, FAUBAI, INILAT, LERU, OBREAL Global, OEI, SEGIB, SBPC, UC, UDUAL**). In total, more than 330 people from the EU and LAC have participated in the Conference either as speaker, commentator, moderator or listener, which shows the great reception and relevance of the event. Dr Barrera mentioned that the themes and presentations seen at the Conference take into account different areas of public policies, such as inclusive education, gender equality, sustainable development, digitalisation, food security, public health, cultural identities, among others. Moreover, Dr Barrera stressed that many presentations were aimed at providing solutions to current social, economic, environmental, and scientific problems, which shows the interest of young scientists to become proactive agents of change.

Elizabeth Colucci, representative of the European University Association (EUA) highlighted the recent signing of an agreement between European university associations such as the EUA, and LAC university associations, which represents an advance in cooperation between networks of European and LAC universities. Elizabeth Colucci also stressed that for the EUA it is very important to have the

voice of students and young researchers at the centre of discussions, and therefore considers these Days as a very relevant event at this time in EU-LAC relations. Thus, she also mentioned the need to keep LAC on the European agenda regarding scientific and innovation cooperation, given the potential of the LAC region, and the historical closeness between the two regions.

For his part, Dr **Oscar Dominguez**, Executive Director of the Colombian Association of Universities (ASCUN) expressed his words of gratitude to the EU-LAC Foundation, given that the Conference has served as a dynamic vehicle for interactions between higher education entities in LAC and the EU. Dr Dominguez highlighted the need for research in LAC to focus on the deepest and most relevant problems in the region, given that although this is often the case, in these moments of transition towards recovery from the crisis brought by the pandemic, it is necessary to bring into focus the most urgent social problems that the region affronts. For this reason, Dr Dominguez emphasised the relevance of the Days, hoping that this type of event would allow concrete actions and projects both in the scientific community of LAC and in the EU-LAC common area of higher education.

The EU-LAC Foundation and its representative, Dr. Adrián Bonilla, would like to thank the speakers for their participation in the call, their presentations and their attendance at the conference.

We express our particular thanks to the university organisations and associations from both regions - ANUIES, ASCUN, AUGM, AUGM, EU-CELAC University Council, CSUCA, ENLACES, EUA, FAP-ALCUE, FAUBAI, INILAT, LERU, OBREAL Global, OEI, SEGIB, SBPC, UC, UDUAL - who actively helped to disseminate the call and delegated representatives in the role of commentator to the Conference.

Review and editing of the document by Bahía Gatti, intern at the EU-LAC Foundation, and by Dr. Anna Barrera Vivero, EU-LAC Foundation.