

Educational innovation maps: territories and networks at the National University of Colombia.

Jaime Parra R.1[<https://orcid.org/0009-0000-3612-4265>], Gabriel Barrero T.2 y Andrés Ramírez- Gamboa3[<https://orcid.org/0009-0008-8912-008X>]

¹Universidad Nacional de Colombia, Bogotá
japarraro@unal.edu.co

²Universidad Nacional de Colombia, Bogotá
gbarero@unal.edu.co

³Universidad Nacional de Colombia, Bogotá
angramirezga@unal.edu.co

Abstract. Latin American public universities face the great challenge of increasing equity in educational opportunities for all students regardless of their ethnic origins, abilities or differences in their school histories prior to university entrance. The article presents a cartographic tool that allows an exploratory characterization of educational innovation at the National University of Colombia (UNAL), from an ecosystemic viewpoint, and whose visualized information contributes to activate educational innovations that favor equity in educational opportunities. The results show that innovations that experiment with curricula and pedagogical methods that integrate conceptual reflection with experiential fieldwork and in territories, from the first semesters, promoted by professors who participate in pedagogical collaboration networks, from a democratic mode of knowledge management, contribute to educational inclusion. Likewise, it is found that a key factor in the mobilization of innovations for educational equity is the social recognition of initiatives for educational change by individuals or groups, at the national headquarters, which have not been generated from calls for proposals or with institutional resources.

Keywords: Educational innovation ecosystems, innovation mapping, networks, territories, equity, inclusion.

1 Introduction

The Universidad Nacional de Colombia (UNAL) has nine headquarters that host both urban and rural populations. The University has created three programs: The Special Program for Admission and Academic Mobility (PEAMA), the Special Admission Program (PAES) and the Autonomous Study Groups (GEA), which seek to expand opportunities for admission and permanence for rural youth, vulnerable groups or victims of the armed conflict.

UNAL, through the National Directorate for Academic Innovation (DNIA), has asked how to promote educational innovations that contribute to inclusion and equity in educational opportunities, especially for students in the PEAMA and PAES programs. The mapping of educational innovation is proposed as a tool to characterize and promote educational innovations, from an ecosystemic approach, oriented towards inclusion.

2 Theoretical Framework

2.1 Educational innovation from an ecosocial perspective

Ceschin and Gaziulusoy (2016) present four levels of innovation: i) product, focuses on improving existing products or developing new products; ii) product - service, involves the integration of objects and services; iii) space - social, involves the global and local contexts of territories and communities; iv) socio-technical, promotes radical transformations to meet social needs by integrating technical and social variables. The last two levels consider the social, organizational and institutional changes required to increase the impact on the solution of problems of social inclusion and educational equity.

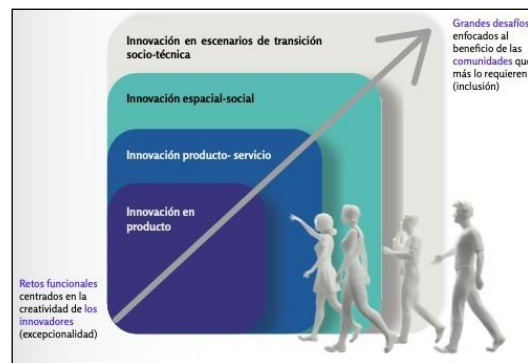


Fig. 1. Innovation scenarios evolution

2.2 Democratic modes of knowledge management

At the end of the 20th century, modes 1 and 2 of knowledge production and management were recognized (Gibbons, 1997). The first responds to academic ways of generating knowledge and the results are disseminated through specialized journals. In the second, knowledge emerges in transdisciplinary and social contexts, the practices of

innovators collectives are reflected and the methodologies involve procedures appropriate to the problem being addressed.

In the last decade, mode 3 of knowledge management and production emerges (Carayannis and Campell, 2012, 2019), based on a democratic approach to cognitive production involving multiple actors. Knowledge production processes are multilateral (different actors), multimodal (different symbolic productions) and multilevel (changing levels of authority).

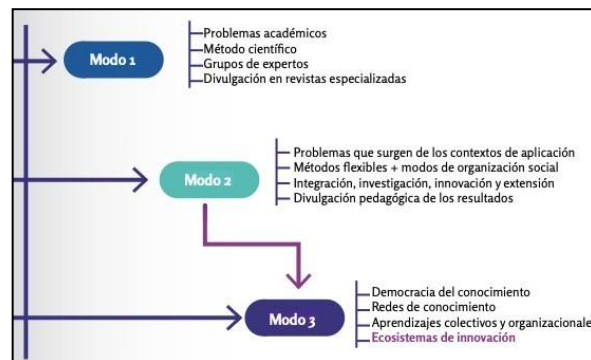


Fig. 2. Modes of knowledge management and production.

3 Methods

3.1 Research tools

Three actions were carried out from an ecosystemic approach:

- Content analysis of institutional documents.
- Interviews to different educational actors.
- Cartographic analysis, which spatially references the innovations and analyzes connections between sites and groups of innovators.

3.2 Documentary population and interview protocols

It was analyzed 111 innovation projects that were circulating publicly on the WEB (hosting unal.edu.co) since 2018. Additionally, information from 36 interviews was analyzed.

3.3 Characterization parameters

Educational innovation maps were designed based on 5 parameters:

- i. Areas of change manifested as conceptual or practical spaces of transformation.
- ii. Innovation capacities expressed by the groups that innovate.
- iii. Contributions to external communities in the territories of influence.
- iv. Sources of financing for innovations,
- v. Obstacles to educational change.

Headquarters		Area of educational change (number of innovations)							
		Academic gov-ernance and management	Curriculum	Teaching strat-egies	Educational re-sources	Learning as-sessment	Formative re-search	Outside Projec-tion	Student welfare
Urban	Medellín	1	--	3	1	--	--	3	1
	Manizales	1	1	4	1	--	4	1	1
	Palmira	--	1	4	3	1	--	2	--
	Bogotá	--	3	32	12	--	6	4	5
Rural and coastal	Tumaco	--	--	1	--	--	--	3	--
	La Paz	1	1	--	--	--	1	1	--
	Ama-zonía	--	--	--	1	--	1	1	--
	Orinoquía	--	--	--	--	--	1	2	--
	Caribe	1	--	--	--	--	1	1	--
Headquarters		Innovation ca-pabilities (in-novative groups)		Contributions to external communities (territories of influence)		Funding or support sources		Obstacles	
Urban	Medellín	9		50		Vice Rector's Office of the headquarters, national calls for proposals		Funding, ad-ministrative management.	
	Manizales	11		8					
	Palmira	5		55					
	Bogotá	21		29					
Rural and coastal	Tumaco	2		100		Inter-site coop-eration, self-fi-nancing		Funding, na-tional level management, acquisition of goods and ser-vices.	
	La Paz	4		75					
	Ama-zonía	4		100					
	Orinoquía	3		100					
	Caribe	3		100					

Table 1. Parameters for characterization of innovations by headquarters.

3.4 Educational innovation maps

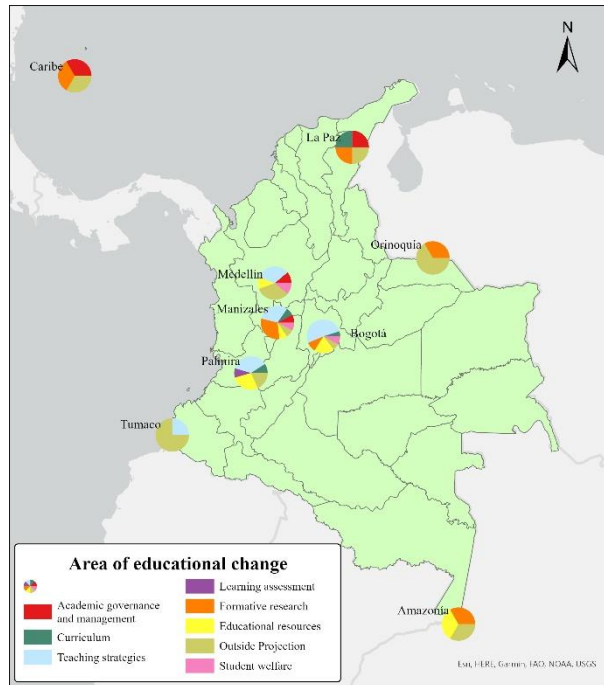


Fig. 3. Map of areas of educational change.

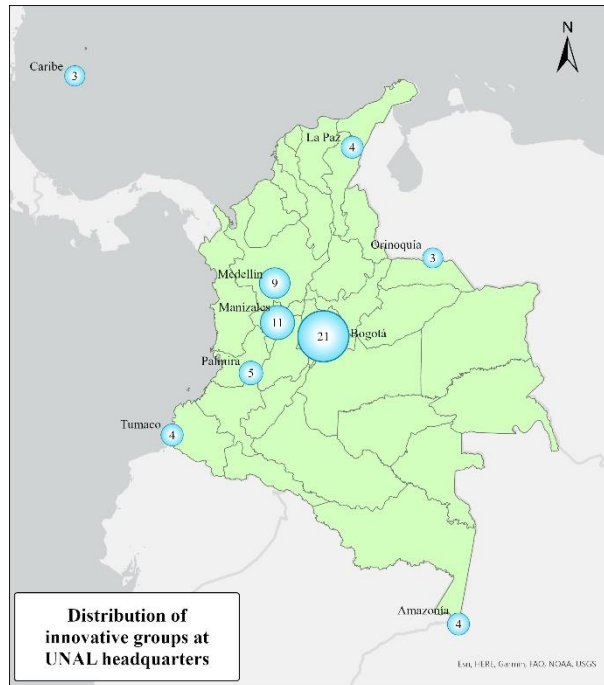


Fig. 4. Map of innovation capabilities

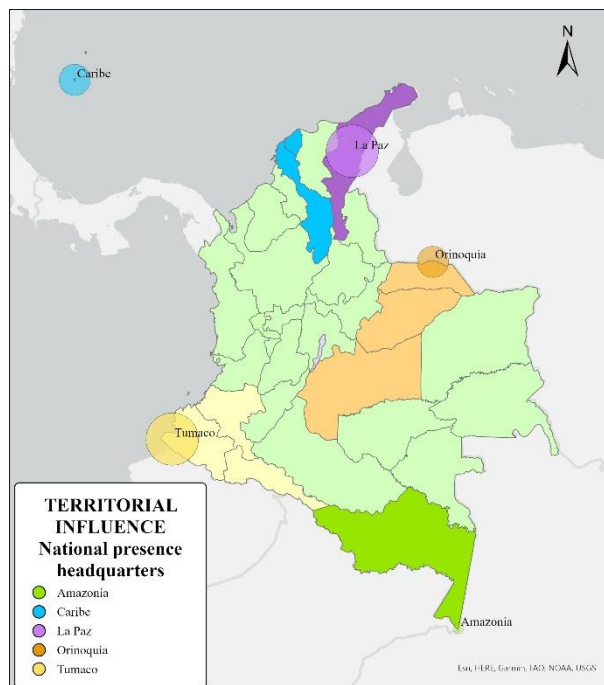


Fig. 5. Map of contributions to external communities.

4 Results

- i. Areas of change: Most of the projects (56.5%) propose changes in teaching strategies and resources, while evaluation (0.9%) and academic management (3.7%) receive less attention. In the rural and coastal headquarters, 63% of the projects articulate conceptual reflection with practical activities (dual models).
- ii. Innovation capabilities: A large part of the innovation projects (42.6%) have been carried out by collectives of professors and students.
- iii. Contributions to communities in the territories: In rural and coastal headquarters there is a greater number of projects (92% of the total in rural and coastal headquarters) carried out with communities.
- iv. Funding: Most of the innovation experiences (65%) are carried out without financial support.
- v. Obstacles: They focus on the conditions of collectivization of the projects among the different sites.

5 Discussion

The mapping shows that in rural and coastal headquarters there is a) greater openness to change, especially in teaching strategies, b) better social conditions for cooperative work and c) greater contributions to communities and territories. Educational innovations in rural and coastal headquarters dynamize innovation ecosystems from a mode 3 of democratic knowledge management, as proposed by Gibbons, Carayannis and Campbell, and contribute mostly to educational equity and inclusion.

6 Conclusions

The promotion of educational innovation, from an ecosystemic approach, makes use of the creative capacities of rural and coastal headquarters that integrate conceptual reflection and field work with communities. Non-formalized or funded innovation initiatives make it possible to identify social criteria for the configuration of cooperative innovation networks from an ecosocial perspective according to Ceschin and Gaziulusoy.

It is important to promote innovations in the areas of institutional governance and management, curriculum management, learning assessment and student welfare focused on increasing educational equity and inclusion.

Likewise, in order to increase the ecosystemic influence, it is necessary to disseminate the results of educational innovations in contexts beyond the university.

7 Limitations and Future Research

In order to increase the scope of the cartographic characterization, it is relevant to take into account the students' evaluations of the innovations in teaching. In addition, it is necessary to develop a more systematic evaluation of the impact of innovations in order to determine their contribution to educational equity and inclusion.

References

- Gibbons, M., Limoges, C. & otros (1.997). *La nueva producción del conocimiento*. Barcelona: Ediciones Pomares-Corredor, S-A.
- Carayannis, E. y Campbell, D. (2012). *Mode 3 Knowledge Production in Quadruple Helix Innovation Systems*. Washington: Springer.
- Carayannis, E. y Campbell D. (2019). *Smart Quintuple Helix Innovation Systems. Howsocial ecology and environmental protection are driven innovation, sustainable development and economic growth*. Washington: Springer.
- Ceschin, F., & Gaziulusoy, I., Evolution of design for sustainability: From product design to design for system innovations and transitions, *Design Studies* (2016)
- Montoya, D. (2016). *Seguimiento a los aprendizajes estudiantiles y factores asociados*. Bogotá: Pontificia Universidad Javeriana. CAE+E.
- Parra, J. y Barrera, G. (2023). *Innovación académica*. Bogotá: Universidad Nacional de Colombia – Dirección Nacional de Innovación Académica.
- Parra, J. (2015) Desigualdad, aprendizaje y educación superior en *El pensamiento Universitario: Debates y desafíos en la educación superior* Asociación Colombiana de Universidades ASCUN No 26, Bogotá, Colombia.
- Parra, J. (2017). Aprendizaje en la universidad: obstáculos y generadores de la excelencia estudiantil en *Evaluación del logro de perfiles de egreso: experiencias universitarias*, Centro Interuniversitario de desarrollo CINDA, Santiago de Chile.
- Parra, J. (2022). Educación para el desarrollo social y productivo en *Políticas para el desarrollo productivo: una agenda para el futuro*, Friedrich-Ebert-Stiftung en Colombia (FESCOL), Bogotá, Colombia.
- Reichert, S. (2019). *The Role of Universities in Regional Innovation Ecosystems*. Suiza: European University Association