

**El Ecosistema del Investigador: Un análisis de la desarticulación
entre producción y compromiso social en Cuerpos Académicos y
sus Investigadores**

*The Research Ecosystem: An Analysis of the Disconnect between Academic
Production and Social Commitment in Mexican Academic Research Groups
and among Their Researchers*

*O Ecosystema do Pesquisador: Uma Análise da Desconexão
entre Produção e Compromisso Social em Grupos Acadêmicos e Seus
Pesquisadores*

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Resumen

Este estudio analiza cómo se articulan seis dimensiones de la actividad científica — investigación, publicación, difusión, divulgación, vinculación e incidencia social— en 25 cuerpos académicos (CA) de cuatro instituciones de educación superior de México. Se realizó un estudio cualitativo, descriptivo y transversal con entrevistas semiestructuradas a integrantes de los CA (112 participantes reportados). Las transcripciones se codificaron temáticamente y se contrastaron con productos académicos de acceso público. Se examinaron las prácticas descritas y los obstáculos percibidos, sin estimar la distribución real del tiempo de trabajo.

En los grupos estudiados, las referencias a la investigación y la publicación fueron más frecuentes que las relativas a la divulgación, la vinculación y la incidencia social. Nueve de los 112 participantes reportaron haber elaborado, durante el último año, un producto para un público no especializado; tres de los 25 CA reportaron contar con convenios operativos. Los

participantes describieron cargas administrativas y dificultades para vincularse con actores externos. Se propone el Modelo de Ecosistema Integral como marco de planificación para las seis dimensiones; su utilidad aún requiere una evaluación empírica. Debido al tipo de muestreo, los hallazgos no son generalizables al conjunto de CA mexicanos.

Palabras clave: cuerpos académicos; producción científica; divulgación científica; vinculación; incidencia social.

Abstract

This study examines how six dimensions of scientific work—research, publication, academic dissemination, public communication of science, collaboration with external stakeholders, and social contribution—relate to one another in 25 academic groups at four Mexican higher education institutions. The study used a qualitative, descriptive, cross-sectional design with semi-structured interviews with group members (112 participants reported). The authors coded interview transcripts thematically and compared them with publicly available academic outputs. The analysis focused on reported practices and perceived obstacles; it did not estimate actual working-time allocation.

In the groups studied, references to research and publication were more frequent than references to public communication, collaboration, and social contribution. Nine of the 112 participants reported producing material for non-specialist audiences in the preceding year; three of the 25 groups reported operational collaboration agreements. Participants described administrative burdens and difficulties connecting with external stakeholders. The Integral Ecosystem Model is proposed as a framework for planning across the six dimensions; its usefulness remains to be evaluated. Non-probability sampling prevents statistical generalization to Mexican academic groups as a whole.

Keywords: academic groups; scientific production; science communication; collaboration; social contribution.

Resumo

Este estudo analisa como seis dimensões da atividade científica — pesquisa, publicação, disseminação, divulgação, engajamento e impacto social — são articuladas em 25 grupos acadêmicos (GAs) de quatro instituições de ensino superior no México. Foi realizado um estudo qualitativo, descritivo e transversal, utilizando entrevistas semiestruturadas com membros dos GAs (112 participantes relataram ter participado). As transcrições foram codificadas tematicamente e comparadas com publicações acadêmicas de acesso público. As práticas descritas e os obstáculos percebidos foram examinados, sem estimar a distribuição real do tempo de trabalho.

Nos grupos estudados, as referências à pesquisa e publicação foram mais frequentes do que as relacionadas à disseminação, engajamento e impacto social. Nove dos 112 participantes relataram ter produzido um produto para um público não especializado no último ano; três dos 25 GAs relataram ter convênios operacionais. Os participantes descreveram dificuldades administrativas e de conexão com atores externos. O Modelo de Ecossistema Integrado é proposto como uma estrutura de planejamento para as seis dimensões. Sua utilidade ainda requer avaliação empírica. Devido ao método de amostragem, os resultados não são generalizáveis para todos os órgãos acadêmicos mexicanos.

Palavras-chave: instituições acadêmicas; produção científica; divulgação científica; alcance comunitário; impacto social.

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Introduction

Research evaluation may prioritize published outputs and their bibliometric indicators. This prioritization raises questions about the recognition of other academic activities, such as public communication and collaboration with external actors. Alperin et al. (2019) document the uneven representation of the public dimensions of academic work in evaluation documents; Hicks et al. (2015) recommend using research metrics with attention to their context and limitations. These contributions guide the examination of the practices described by the participants, without assuming that they characterize all Mexican institutions equally.

For this study, the Integrated Ecosystem Model is proposed as an analytical framework with six dimensions: research, publication, peer dissemination, outreach to non-specialized audiences, engagement with external stakeholders, and social impact. Impact is understood here as the documented identification of uses or changes associated with the research results; it is not automatically equated with the social relevance of the topic. These dimensions serve to organize the interview and interpretation, but they are not mandatory stages of all research.

The General Law on Humanities, Sciences, Technologies, and Innovation (2023) recognizes participation in and access to the benefits of scientific knowledge. In this context, it is pertinent to examine how research groups describe their forms of communication and collaboration. The scope of this work is limited to the practices and perceptions of the participating groups; it does not evaluate compliance with legal provisions or the causal effects of evaluation policies.

Etzkowitz and Leydesdorff (2000) described the relationships between universities, industry, and government using the Triple Helix model. This approach allows us to position these relationships as an object of analysis, although it does not, in itself, demonstrate how the interviewed academic groups operate. This research investigates whether the groups report collaboration with actors outside their institution and how they describe their outcomes.

The research questions were: What activities and priorities do the members of the CA describe in the six proposed dimensions? What obstacles do they perceive for dissemination, networking, and social impact? What elements could guide more explicit planning of these activities?

The objective was to describe the practices and perceived obstacles in 25 Cas and to formulate a planning framework that could be subsequently evaluated. Due to its cross-sectional and qualitative design, the study does not allow for causally attributing the observed practices to incentive systems.

Materials and methods

A qualitative study with a descriptive and analytical scope was conducted. This approach allowed for the examination of the perceptions and practices reported by members of academic bodies within their institutional context (Denzin & Lincoln, 2011). Code frequencies are used solely to support the descriptive analysis of the corpus; they are not measures of time, intensity, or social impact.

Study design and sampling

A cross-sectional design was used. Participating academic bodies included those from the Autonomous University of Zacatecas, the Autonomous University of Aguascalientes, the Autonomous University of San Luis Potosí, and the Autonomous University of Guadalajara. The selection of institutions and groups was non-probabilistic.

The convenience and quota sample comprised 25 CAs and 112 reported members (Creswell & Poth, 2018). The selection unit was the CA, and the interpretation unit included the statements of its members. The distribution of interviews and participants by group is not available in this manuscript; this information must be incorporated from the original records before submission to the publisher. The inclusion criteria were:

1. Belonging to a CA with the status of "In Consolidation" or "Consolidated" before the Ministry of Public Education (SEP-PRODEP).
2. Groups made up of a minimum of 3 and a maximum of 5 members to ensure the cohesion of the group analysis.
3. Have at least one member with a current appointment in the National System of Researchers (SNII).

Data collection instrument

A semi-structured interview guide was developed and reviewed by five research professors from the National System of Research Information (SNII) at the Autonomous University of Zacatecas. The expert review refers to the content of the guide and does not, in itself, demonstrate its psychometric validity. This format allows for the maintenance of common questions and the exploration of emerging themes (Kvale, 2011). The guide addressed four areas:

- A. Internal organization: functions and distribution of tasks.
- B. Research and publication: reported processes and products.
- C. Communication and linkage: dissemination, outreach and external collaboration.
- D. Social impact: documented or perceived uses and changes related to the research results.

The interviews were conducted in a hybrid format (in-person and remote) between January and March 2026; they were recorded and transcribed. Participants were informed about the academic use of their responses, and their opinions were not individually identified in the report. The description of consent and data protection should be supplemented with the available field notes (Flick, 2015).

Data analysis and tools

The transcripts were organized in ATLAS.ti, version 23. Coding combined initial categories derived from the six dimensions with emergent codes through comparison between fragments and groups (Strauss and Corbin, 2002). Frequencies indicate coded segments, not the number of people or the proportion of the workday.

1. Initial coding: identification of activities, priorities, and obstacles described.
2. Code relationship: comparison of communication and linking practices with those of research and publication.
3. Interpretive synthesis: development of the Integrated Ecosystem Model as a proposal pending validation.

The statements gathered in the interviews were compared with publicly available academic materials. This comparison allows for the examination of documentary convergences and discrepancies, but does not allow for the verification of all reported activities or the attribution of a social impact to them.

Results

In the corpus analyzed, mentions of publication and research were more numerous than those of dissemination, outreach, and social impact (Table 1). The coding frequency reflects the presence of themes in the transcripts and also depends on the interview guide; therefore, it does not reflect the time invested nor does it reveal an imbalance between the activities of each CA.

Table 1 records 456 segments coded as publication and 382 as research. These figures describe the analyzed material; they do not allow us to state that a specific proportion of the participants exclusively associate academic success with indexed journals or that they dedicate 85% of their time to publication.

Some participants linked their research decisions to the possibility of publishing the results. This interpretation is consistent with the importance of public activities in academic evaluation studied by Alperin et al. (2019), but the data collected here do not allow us to establish a causal effect of incentives.

Peer dissemination was observed in 124 coded segments (Table 1). Conferences and certificates were mentioned in the interviews; these statements allow us to identify reasons attributed to participation in events, without implying that all dissemination activities pursue that goal.

Dissemination aimed at non-specialized audiences appeared in 32 coded segments. Nine of the 112 participants reported having produced such a product during the previous year. The interviews suggest difficulties related to time, resources, and coordination; the data presented do not allow for a description of its territorial distribution or confirmation that certain populations are systematically excluded.

The linkage appeared in 48 coded segments. Three of the 25 CAs reported agreements with operational activities, which is equivalent to 12% of the sample. Several participants described the linkage procedures as a difficulty; the existence of agreements, by itself, does not measure their results.

Social impact appeared in 12 coded segments, the lowest frequency among the six dimensions in Table 1. In some of the interviews, the social relevance of the topic was presented as equivalent to the effective use of the results. The available material does not allow us to determine how many projects produced verifiable changes or to attribute those changes to a specific research project.

Table 1. Frequency of segments coded by dimension

Analytical Category (Dimension)	Appointment Frequency (ATLAS.ti)	Interpretation frequency	of Predominant Emerging Code
Publication	456	Encoded segments	"SNII Survival"
Investigation	382	Encoded segments	"Methodological rigor"
Diffusion	124	Encoded segments	"Peer validation"
Linkage	48	Encoded segments	Registration procedures
Divulagation	32	Encoded segments	"Secondary activity"
Incidence	12	Encoded segments	"Lack of follow-up"

Note: Segment frequencies in interviews; the same person may contribute several segments.

These do not represent participants, time, or impact.

The comparison of fragments suggested the need for training and support in planning outreach and advocacy activities (Strauss and Corbin, 2002). This interpretive category refers to the competencies mentioned by the participants; it does not constitute an individual skills assessment nor does it demonstrate a general deficiency in doctoral training.

Participants described difficulties in identifying and documenting uses of their results outside of academia. Table 2 summarizes the obstacles mentioned in the interviews. Their frequency indicates how many participants mentioned them, provided the original record confirms per-person coding; it does not measure the magnitude of the effect of each obstacle.

Table 2. Obstacles mentioned by participants

Perceived Obstacle	Mentions	Percentage (%)	Type of barrier described
Excessive administrative burden	98	87.5%	Administrative
Lack of training in impact management	84	75.0%	Formative
Lack of incentives for disclosure	76	67.9%	Institutional
Disconnection from institutional sectors with which they could be linked	62	55.4%	Articulation
Lack of budget for linkage	55	49.1%	Economic

Note: Percentages calculated based on 112 members; categories are not mutually exclusive.

Interpretation requires comparing the coding unit with the original database.

Taken together, the testimonies point to perceived administrative, educational, and economic barriers to developing communication and networking activities. The research does not allow us to determine which of these factors has the least social impact.

Administrative burden was mentioned by 98 participants, according to the summary in Table 2. Some indicated that procedures limit the time available for fieldwork and dialogue with external stakeholders. This is a reported perception, not an independent measurement of time.

Eighty-four participants mentioned training needs in planning outreach or advocacy activities. The relevant skills may vary depending on the discipline and the purpose of each project.

Seventy-six participants cited a lack of incentives for dissemination as an obstacle. This data reflects the perception of the sample and does not allow us to conclude how the SNII formally evaluates each activity.

Sixty-two participants mentioned difficulties in establishing contact and collaborating with external institutions or sectors. It would be necessary to examine specific processes to determine at what stage these barriers arise.

Fifty-five participants cited budgetary constraints for the outreach. Travel and material expenses were mentioned in the interviews; however, no accounting estimate of these expenses was obtained.

These obstacles provide a basis for designing and evaluating forms of institutional support, training, and external collaboration that are in accordance with the needs of the participating groups.

Discussion

In the 25 research centers studied, research and publication activities were more prevalent in the transcripts than outreach, community engagement, and social impact activities. This difference pertains to the topics mentioned during the interviews and does not reflect a distribution of time or resources, nor can it be generalized to the national scientific system.

The theory of academic capitalism offers a framework for interpreting how institutional criteria can guide work priorities (Slaughter and Leslie, 1997). Participants described incentives associated with publication; to assess their causal effect, it would be necessary to analyze institutional rules, trajectories, and changes over time.

The distinction between peer dissemination and dissemination to other audiences is useful for interpreting the responses. The small number of dissemination products reported by participants invites an examination of their production conditions, target audiences, and outcomes. The Triple Helix model of Etzkowitz and Leydesdorff (2000) refers to the link between university, industry, and government; it does not provide evidence regarding dissemination within this sample.

The low frequency of mentions of social impact may be due to the practices of the groups themselves, as well as the wording of the questions and the coding criteria. Furthermore, it does not, on its own, allow for the establishment of an impact rate or demonstrate that there are no social outcomes outside of the consulted material.

The interviews suggest that some participants would like tools to plan collaborations, communicate findings, and document potential uses of their results. This need can be addressed depending on the discipline and type of research, without assuming that all projects must produce immediate interventions.

The Integrated Ecosystem Model is proposed as a planning tool that makes visible the various scientific activities and their potential relationships. The model is based on the conceptual organization and interpretation of interviews; it has not yet been tested, nor has it been shown to increase social impact.

Conclusion

Among the 25 participating academic groups, research and publication activities were more frequently mentioned than outreach, community engagement, and social impact. Additionally, some members described administrative burdens, training needs, and difficulties collaborating with external stakeholders. These results reflect perceptions and coding frequencies, not a direct measure of the time spent on each activity.

Nine of the 112 members reported a product for a non-specialized audience during the last year, and three of the 25 research centers reported operational agreements. These partial indicators do not allow for measuring the quality of the products, the results of the agreements, or the social impact of the research.

The Integrated Ecosystem Model organizes six dimensions of work to guide discussion and planning. Its effectiveness was not evaluated in this study; a pilot application should define indicators, document processes, and consider differences between disciplines.

The non-probabilistic selection of 25 CAs from four institutions, the cross-sectional design, and the interviews limit statistical generalization. The information presented also does not allow for attributing the observed practices to the SNII criteria or verifying long-term social effects.

The results suggest examining institutional support for communication, collaboration, and monitoring of knowledge use when these purposes are relevant to the project.

Future studies can compare interviews, documents, and observation, as well as develop distinct indicators of dissemination, engagement, and social impact. This distinction would help to jointly evaluate academic output and its potential uses outside academia.

Future lines of research

A first line of inquiry could define and validate social impact indicators capable of recording changes in institutional practices, public policies, or community processes. It is important to distinguish between research outputs, their uses, and the changes observed before attributing results to a project.

The Integrated Ecosystem Model could also be evaluated through a longitudinal pilot study. This would require initial criteria, monitoring of practices, and, if the aim is to attribute effects, relevant comparisons.

Another line of inquiry would examine different pathways for knowledge use and transfer, including those that do not originate from an academic publication. It would be useful to identify the facilitators and barriers to collaboration in each pathway.

Training in communication and networking can be studied according to the discipline, the type of research, and the stakeholders involved. This would allow for defining the relevant competencies without attributing a single, direct social purpose to all research.

Comparative studies with larger samples could explore differences by institution, region, discipline, and level of consolidation of academic bodies. Only with appropriate designs could it be established whether the patterns described here appear in other contexts.

Longitudinal studies could analyze the relationship between specific evaluation rules and changes in researchers' stated and observed priorities, considering other institutional factors.

It would also be worthwhile to study the target audiences of outreach materials and how accessible formats are designed for different regions. This study did not measure the territorial coverage of the reported activities.

Finally, a multidimensional matrix could be developed to examine the six proposed dimensions. Its definition, validity, and usefulness would need to be evaluated before using it as a diagnostic tool.

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