



Red STEM
Latinoamérica

Territorios
STEM+

apoyo de actores clave que deberían
ser parte de los Territorios STEM+

+ Interés

STEM+ Territories Maturity Model



UNNO
Líderes en educación STEM



EDUCACIÓN PARA LA VIDA

SIEMENS | Stiftung

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Siemens Stiftung et al., (2024, Junio). Modelo de Madurez de Territorios STEM+. Enlace web



Introduction



During the II Meeting of the STEM Latin America Network (Red STEM Latinoamérica, RSL), held on January 16-19, 2023 in the city of Monterrey, Mexico, the members of the Network participated in a foresight exercise to ratify the common purpose that inspires their collective work and to agree on strategic actions to strengthen, expand, disseminate, and measure the initiatives advanced by the organizations currently invigorating this space of open collaboration that the Network has become.

That purpose reflects the interest of the Network's various actors/members in striving to "influence the formation of committed, responsible, and empathetic citizens who actively participate in constructing sustainable communities and territories. We do this by inspiring and promoting STEM education as an innovative approach to integral education."

The *Declaration of Monterrey* also set forth five major agreements that promote the Network's collective action:



A.

Rethink and co-construct the STEM+ educational approach from the Latin American regional context for sustainable social development.

B.

Foster spaces for dialogue and collaborative intersectoral action to communicate ideas, mobilizing innovative initiatives for quality education that contributes to equity and social transformation in Latin America.

C.

Promote the open education movement by creating and exchanging knowledge, best practices, resources, and significant experiences.

D.

Systematize and monitor the NETWORK initiatives to measure and document their impact locally and regionally.

E.

Participate in the construction of a roadmap for the NETWORK, created from the agreements of the node meetings held during the II Meeting of the STEM Latin America Network.

As part of building the roadmap for the management of the STEM Latin America Network, agreed to during the Network's II Meeting held in Monterrey, Mexico, the participants prioritized the development of five strategic projects. These projects seek to respond to the Network's interests, expectations, and pressing needs, and they will be managed by teams of organizations from different sectors and countries in the region.

One of these projects envisions the construction of a STEM+ Territories Maturity Model that will serve as a reference for the creation of new initiatives and the management of existing ones, by laying out a framework of dimensions, levels of development and metrics to aid in understanding them.



This document presents the first version of this model, which was constructed in three stages:

- 01.** **State of the art analysis:** The project management team carried out a literature review to broaden understanding of concepts such as *STEM education*, *STEM+ approach*, *STEM+ Territories* and *maturity models*.
- 02.** **Core concepts:** Through focus groups and semi-structured interviews with experts on the subject, the basic concepts underpinning the maturity model presented here were defined.
- 03.** **Maturity model:** The model was co-constructed in an exercise that used as inputs the contributions of academics, territorial managers, and organizations promoting educational innovation agendas, among others.

This version of the maturity model includes a description of each dimension and the different maturity levels proposed. This process was an exercise in collective construction by the STEM Latin America Network, and is included among the portfolio of open resources for adopting and implementing good practices in the management of initiatives with collective impact for educational transformation. As a knowledge asset of the Network, the maturity model will be available for consultation, use, adaptation, and transformation through the Center for Open Educational web portal **CREA** (Centro de Recursos Educativos Abiertos):



1. State of the art analysis

1.1 STEM educational approach in Latin America

A preliminary look at the mobilization of STEM+ Territories in Latin America shows that in 2014, a series of meetings began that would ultimately give rise to the STEM Latin America Network, an association of institutions from different sectors—government, education, civil, private, among others—that are working to ensure that every child in the region has the best opportunity to be educated, develop their personality, and shape their life freely. This entity, coordinated by the Siemens Foundation (Siemens Stiftung) and created through a meeting of wills, now boasts more than 180 member institutions from 14 countries in the region, all united by their shared interest in offering quality STEM education and providing opportunities for educational innovation.

It should also be noted that since 2016, several Latin American countries, including Chile, Mexico, Colombia, Peru, and Ecuador, have launched their own strategic efforts along these lines as a way of inspiring processes such as: a) active, contextual learning; b) interdisciplinary initiatives to enhance the development of 21st century competencies; c) strengthening knowledge in science, mathematics, technology, and other disciplines to educate children and youth for global citizenship and sustainable development (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2020), which form part of the educational quality perspective in the 2030 Agenda.

Within the framework of this scenario, some collectively constructed definitions are presented below that have been inspiring international cooperation processes and mobilizing open knowledge transfer and systematic mappings of the 47 STEM+ Territories that currently exist in Latin America¹.

¹ As of November 2023.



- **STEM Education:** Reference for managing an educational sector in which the following transformations are being driven: 1) the generation of intersectoral partnerships to promote actions with a positive impact for educational institutions that have decided to implement the approach; 2) the stimulation of knowledge management processes related to the STEM approach with teachers and administrators, to boost the development of professional skills for implementing the approach at the local level, and 3) the construction of collaborative agendas to foster collective efforts to strengthen support and monitoring of STEM initiatives implemented.
- **STEM Educational Approach:** Pedagogical and didactic perspective focused on promoting interdisciplinary approaches to contextual situations or problems in order to link science, technology, engineering, mathematics, and other fields of knowledge for the purpose of promoting the development of relevant, situated learning (integration of active methodologies and 21st century skills, among others) and thereby contribute to educational innovation and sustainable development.
- **STEM Territory:** Starting from the premise that the concept of territory has a theoretical and methodological connotation, “given that it explains and describes the spatial unfolding of the social relations established by human beings in the cultural, social, political or economic spheres” (Llanos-Hernández, 2010, p. 207), the STEM Territory is understood as the group of collective initiatives created to promote **STEM education** in a specific territorial jurisdiction (local, regional or national), with the involvement of various actors and organizations working in a coordinated manner (governance structure) to fulfill a common purpose and objectives (shared agenda). In the terms of the Organization for Economic Growth and Development (OECD, 2019), a territory strategy could also be understood as a public policy that makes it possible to give a common strategic framework to a set of initiatives. Such a strategy can also promote the development of instruments for monitoring and evaluating impact results, and allowing stakeholders to better understand the actions involved.

These concepts are key for understanding the STEM+ Territories Maturity Model presented in this document.



1.2. Benchmark Maturity Models

Maturity models have been created to serve as theoretical benchmarks for measuring or estimating levels of development in multivariate systems. In this regard, they fulfill two important functions: 1) to promote a more accurate understanding of the level of development of an organization/ process in relation to the defined model, and 2) to provide inputs and pathways to manage the

development of the dimensions or variables that make up the model.

Given that having a maturity model is important for more assertively and effectively understanding and managing STEM+ Territories, five different models focused on collective impact initiatives were analyzed. Each of these models is described below.

Benchmark Model 1. FSG (Foundation Strategy Group) Maturity Model for Collective Impact Initiatives

The FSG Maturity Model (Kania et al., 2018) is used to assess the development of collective impact initiatives² in diverse areas such as education, health, and community development. This maturity model consists of **five stages** representing different levels of development in terms of organizational structure, collaboration, learning, and capacity to achieve a sustainable impact:

01. Aspiring: At this initial stage, organizations are exploring the possibility of engaging in a collective impact initiative. They have a shared vision for change, but have not yet established a formal organizational structure for collaboration. Stakeholders are in the exploratory stage and are seeking to establish relationships of trust.

² The concept of collective impact included in this document is based on the premise that no single actor can effectively solve complex (systemic) social problems alone, and that collaborative and coordinated action is needed to achieve significant change. John Kania and Mark Kramer (2011) propose the concept of collective impact based on five key conditions: having a common vision and shared agenda, establishing a collaborative structure that fosters communication and coordination, using data and measuring progress on an ongoing basis, involving key stakeholders in an inclusive manner, and adopting flexible and sustainable financing strategies.



02. Incipient: At this stage, entities have established an organizational structure and basic governance for collaboration. Objectives have been identified and preliminary strategies have been developed. Stakeholders are working together to design interventions, and systems for communication and coordination are being established.

03. Growing: In this stage, collaboration is growing, and initial results are being achieved. Organizations are learning from experience and improving their approach. Measurement systems are being developed and lessons learned are being shared. Collaboration is being strengthened and there is more trust among stakeholders.

04. Established: At this stage, a solid collaboration has been established and sustainable impact has been demonstrated. Organizations have developed systems for ongoing assessment and learning. Evidence-based approaches are being adopted and successful interventions are being scaled up. A solid governance structure is in place and stakeholders are committed to long-term collaboration.

05. Enriched: In this final stage, collaboration has reached its full potential and is generating sustainable systemic change. Innovative strategies have been developed and implemented and structural and systemic barriers are being addressed. Collaboration has become a driver of social change and stakeholders are continually learning and adapting to maintain impacts.

Benchmark Model 2. StriveTogether's maturity model for collective impact initiatives

The StriveTogether Maturity Model for collective impact initiatives³ (2017) is a conceptual framework designed to evaluate the level of development and progress of collective impact initiatives focused on improving educational outcomes from cradle to career. This model has **four levels**, which correspond to the stages of development of a collective impact initiative in the educational field:

³ StriveTogether is a nonprofit organization dedicated to improving education in communities across the United States.



01. Exploration: At this early stage, organizations and stakeholders are exploring the possibility of collaborating to improve educational outcomes in the community. Relationships are being established and a shared vision of change is being created. Stakeholders are identifying key challenges and opportunities for improvement.

02. Construction: At this stage, collaboration is taking shape, and stakeholders are building a solid organizational structure. Strategic partnerships are being formed and shared governance systems are being established. Specific goals and objectives are also being identified and prioritized to improve educational outcomes.

03. Implementation: At this stage, collective impact initiatives are implementing actions and programs to achieve the desired educational outcomes. Data-driven approaches are being used and best practices are being shared among participating organizations. Measurement and monitoring systems are also being developed to assess progress and make adjustments as needed.

04. Transformation: In this final stage, the collective impact initiative has achieved sustainable systemic change in the community's educational outcomes. Effective interventions have been implemented and are being expanded and scaled up to reach more students. In addition, systemic and structural barriers affecting education are being addressed and equitable access to education and outcomes is being promoted.





StriveTogether's maturity model enables organizations and stakeholders to identify areas of strength and opportunities for improvement, set clear goals, and continue moving toward a more meaningful collective impact on community/society education.

Benchmark Model 3. Tamarack Institute's maturity model for collective impact initiatives

The Tamarack Institute's Collective Impact Initiative Maturity Model⁴ (2019) is a conceptual framework that provides a structure for assessing the level of development and maturity of collective impact initiatives at the community level. This model consists of **five stages** corresponding to different levels of development in regard to community collaboration, capacity for change, and improvement of collective well-being:

- 01. Connection:** In this initial stage, stakeholders are building relationships and forging links with each other. Networks are being built and a solid foundation of mutual trust and commitment is being constructed. Connection is the first step toward deeper collaboration.
- 02. Participation:** In this stage, stakeholders are actively involved in collaboration. Knowledge, resources and experiences are being shared. People are participating in joint activities and projects, strengthening the sense of collective ownership and responsibility.
- 03. Action:** In this stage, the collaboration translates into concrete. Stakeholders are implementing coordinated strategies and programs to address challenges and achieve the impact desired. Joint action generates visible change and demonstrates the power of collaboration.

⁴ El Tamarack Institute is a nonprofit organization focused on strengthening social change in communities.



04. Influence: In this stage, collaboration goes beyond direct results and begins to influence systemic change. Stakeholders are working together to influence policies, practices, and structures that affect the well-being of the community. The aim is to create a sustainable and far-reaching impact.

05. Transformation: In this final stage, collaboration has led to deep and sustainable transformation. Fundamental changes have been achieved in the community and collective well-being has been significantly enhanced. Transformation encompasses cultural, structural, and institutional changes that last over the long run.

The Tamarack Institute's maturity model provides a clear and progressive framework for assessing the level of development of collective impact initiatives. It helps organizations and communities identify areas for improvement, set clear goals, and move toward more effective and transformative collective impact.

Benchmark Model 4. Living Cities maturity model for collective impact initiatives

The Living Cities maturity model for collective impact initiatives⁵ is a conceptual framework designed to assess the level of development and progress of collective impact initiatives in the urban environment. This model consists of **four stages** corresponding to different levels of development related to collaboration, capacity for change, and impact results:

01. Exploration: At this early stage, organizations and stakeholders are exploring the possibility of collaborating to address urban challenges. Key issues are being identified and relationships of trust are being forged among stakeholders. A shared understanding of challenges and opportunities is being sought.

⁵ Living Cities is a collaboration of foundations and companies dedicated to improving living conditions in cities.



02. Convergence: In this stage, stakeholders are aligning their efforts and resources with a shared vision and objectives. Governance and decision-making structures are being established to facilitate collaboration. Stakeholders are coordinating efforts and exploring innovative approaches for addressing the urban challenges identified.

03. Implementation: In this stage, collective impact initiatives are carrying out concrete interventions and actions to achieve the desired outcomes. Data are being collected and analyzed to measure the progress and effectiveness of these interventions. Stakeholders are learning and continually adjusting their approaches to improve outcomes.

04. Sustainability: In this final stage, the collective impact initiative has achieved a lasting, sustainable impact on the community. Mechanisms are in place to maintain the changes and the continuity of collaborative efforts. Stakeholders are sharing lessons learned and broadening the scope and scale of successful interventions.

The Living Cities model helps organizations and stakeholders to identify areas of strength and opportunities for improvement, as well as to set clear goals for moving toward more effective and sustainable collective impact in cities.

2. STEM+ Territories Maturity Model



2.1. Core concepts

Definition: The STEM+ Territories Maturity Model is a frame of reference co-constructed with different actors in the STEM+ Latin America Network that fosters a deeper understanding of the collective impact initiatives known as STEM+ Territories and drives their management.



2.2. Structural overview

The maturity model is structured around four dimensions, 14 domains, and a scale of four levels of development for territorial initiatives.

2.3. Dimensions

The model's dimensions are proposed categories that emerged from an exercise in which participants grouped common elements present in the conceptual frameworks and configurations of STEM+ Territories. These dimensions in turn are broken down into more specific units, which are defined in this model as management domains. The dimensions proposed in the model are as follows:

- **Vision:** Includes high-level considerations and definitions that guide the management of the STEM Territory.
- **Networking:** Structure in which the dynamics of collective work and collective leadership take place. Networking is essential for progressively achieving the actions proposed for the STEM Territory and for contributing to its long-term sustainability.
- **Collective learning:** Refers to the processes of pedagogical appropriation, learning experiences, and knowledge management that are desirable for the territory in the context of STEM education.
- **Monitoring and evaluation:** Covers the mechanisms for monitoring and evaluation defined and agreed upon for a STEM Territory that enable the collection of data and evidence to support its relevance and impact.





Figure 1: Dimensions of the STEM+ Territories Maturity Model



2.4. Domains

Domains are management units or areas within the initiatives of STEM+ Territories. The domain-based framework plays a central role in managing territories, since it provides more specific areas of action than those offered by the dimensions and thereby enables the gradual development of territorial agendas.

The domains included in each dimension of the maturity model are described below.

2.4.1. Domains of the “Vision” dimension

- **Horizon:** Refers to the definitions that guide the initiative’s strategic direction. It includes the definition of a shared purpose; short-, medium- and long-term objectives; goals; and expected outcomes. This domain reflects the transformational impact sought by the territory. It also defines the strategic focus (e.g., STEM+ Territory Sustainable Development, STEM+ Territory SER).



- **Public policy:** Refers to the existence of public policies for STEM education, as well as the territory's strategic, tactical, and operational alignment with existing policies (education and associated fields).
- **Planning:** Refers to tactical and operational management to achieve the purpose and impact defined in the "Horizon" domain. It includes roadmaps, action plans, and ongoing strategic planning exercises carried out in the territory.
- **Comunicación:** Refers to strategic communication for positioning the territorial initiative. It includes the dissemination of actions implemented, circulation of information, and definition of communication channels between the initiative and its stakeholders.
- **Sustainability:** Refers to the existence of plans and actions to guarantee the continuity of the initiative, specifically funding and long-term programs or projects, among other factors.

2.4.2. Domains of the "Networking" dimension

- **Governance:** Analyzes the presence of a collective leadership structure that drives the STEM+ Territories initiative. The governance body's operating rules, decision-making, and roles/responsibilities are also evaluated.
- **Intersectoral cooperation:** Refers to activities to identify, link, and coordinate actions by other actors that support the agenda defined for the STEM Territory initiative.





- **Networks of collaboration and learning:** Refers to the existence of networks and communities of learning and/or leadership, as well as the interactive dynamics and development of joint initiatives that contribute to meeting the objectives of the STEM Territory.

2.4.3. Domains of the “Collective learning” dimension

- **Knowledge management:** Refers to existing actions (under implementation and planned) in the territory to generate, adapt, implement, and transfer knowledge of value for the purposes of the territory. It includes the recording, systematization, and transfer of good practices and significant experiences.
- **Learning environments** Se refiere a la existencia de espacios y entornos que contribuyen al desarrollo de las competencias que promueve la educación STEM. Alude también al desarrollo de acciones articuladas con otros actores de ciencia, tecnología, cultura e innovación en los territorios —museos, centros de ciencia, etcétera—, así como a las iniciativas que buscan fortalecer los ambientes de aprendizaje de las instituciones educativas (kits de robótica, salas para programación, etcétera).
- **Learning experiences:** Refers to the existence, diversity, and quality of learning experiences for students planned and implemented as part of the STEM+ Territory initiative.
- **Training:** Refers to actions envisioned and implemented by the territory to strengthen the competencies of STEM educational actors (teachers, administrators, officials), as well as the existence of platforms/ services that support such training and offer open content/ courses to strengthen these competencies. It also refers to the presence of train-the-trainer instances.



2.4.4. Domains of the “Monitoring and evaluation” dimension

- **Monitoring:** Refers to the mechanisms defined by the STEM+ Territory initiative to monitor the progress of activities implemented and analyze information for decision making.
- **Evaluation:** Refers to the planning and existence of studies and analyses aimed at measuring the impact of the territory’s management in relation to projections made in the strategy dimension.

2.5. Maturity levels

The model proposes four levels reflecting the different stages of growth through which STEM+ Territory initiatives go through, from an initial stage associated with the emergence (declaration) of a new STEM+ Territory—with the definition exercise, organization, and essential agreements that this entails—to a stage of sustainable expansion or transformation in which it becomes evident how the STEM Territory initiative mobilizes actors and implements high-impact initiatives to fulfill its purpose and objectives (including influencing public policy).

To identify the stages, a diagnostic tool will be applied by the management teams to each of the model’s domains. The weight of the level identified in each group of domains will reflect the level of maturity of each dimension, which in turn will provide a reference for the level of maturity of the STEM Territory initiative.

More than simply a score, the model’s proposed levels or stages reflect the presence of certain characteristic traits of a STEM Territory initiative at a

given moment in time (temporal reference), and serve as a starting point for planning actions aimed at strengthening the domains that are found to be in more precarious stages of maturity, thereby contributing to the growth (maturity) of the territory.

The proposed levels are described below.



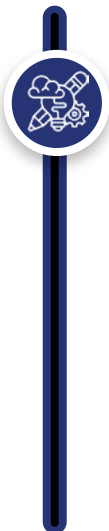
Early stage: This level corresponds to the initial stage of a STEM Territory. At this level, aspects inherent to the concept of a collective impact initiative that are crucial for its existence and development--such as a common purpose, the identification of actors who can contribute to its management, or the existence of projects or initiatives that join (those that exist previously) or are created to further the STEM Territory. This is a stage of core definitions that will shape the idea of the territory.



Growth stage: This level corresponds to a territorial initiative that has begun to manage a shared agenda based on a basic governance structure, involving multiple actors whose roles are gradually being defined. This stage differs from the early stage in that here, characteristic features of the territory and some signs of its positioning are beginning to appear.



Consolidation stage: This level displays very well-defined processes and structures in the STEM Territory. The governance arrangement is well structured and the collective leadership dynamics are evident. The territory has managed to persist over time and continue despite changes in government.



Sustainable expansion stage: This level reflects a territorial initiative in which the elements of the strategic vision are clearly defined, and ongoing updating, review, and validation processes are in place. There is a solid governance structure in place, which has led to a streamlined collective decision-making process; the initiative has moved to the next level and is sustainable over time. There is a long-term vision and ongoing initiatives or projects (that in some cases have been transformed). There is evidence that results and impacts are being achieved and public policy design and implementation are being influenced. Knowledge management processes are in place, best practices are shared, and so on.



3. Descriptors of the STEM+ Territories Maturity Model



The use of the maturity model is based on the identification of attributes or conditions present in each dimension and domain for each STEM Territory initiative. The descriptors of the different stages (levels) of maturity for each domain, grouped by dimension, are presented below.

3.1. Maturity level descriptors. Dimension: Vision

Domain	Stage	Description
Horizon	Early	The initiative still lacks the essential elements of a strategic vision, although spaces for dialogue and collective construction have been initiated to define them.
	Growth	Most elements of the strategic vision have been defined for the territory and participatory processes to define new definitions are periodically organized.
	Consolidation	The territory has a clear strategic vision based on a shared purpose. Short- and long-term objectives and associated goals have been established. The territory is putting actions in place to share the elements of this vision among stakeholders.
	Expansion	The territory has a fully defined strategic vision that is used as the foundation for its projects and initiatives, as well as for engagement with new actors. This vision has a long-term horizon that fosters the initiative's sustainability. Periodic validation and updating processes are in place. Stakeholders recognize the strategic vision for the territory.



Domain	Stage	Description
Public policy	Early	There is no public policy mapping that addresses STEM education/Education for sustainable development. Where public policies have been identified, the processes to coordinate them with the strategic vision and actions for the territory are weak or incipient.
	Growth	Public policies in the territory that address STEM education/Education for sustainable development have been identified. The elements of the territory's vision, including its strategic objectives and actions, are generally aligned with this policy. The initiative is continually carrying out actions to strengthen this coordination and to position the STEM Territory among decision-making stakeholders or public policy makers.
	Consolidation	There is strong articulation between the territory's public policy and the vision of the STEM Territory initiative (including ongoing dialogues with decision-making actors and/or public policy makers. The initiative is moving from alignment with public policy to public policy advocacy. Inputs are continually produced for public policy design in areas such as education, science, technology, innovation and the environment, among other fields.
	Expansion	There is evidence that the STEM Territory initiative is influencing ongoing processes in the design and implementation of public policies for STEM education (including fields such as education, science, technology, innovation, and the environment, among others). The territory's strategic objectives and actions reflect their alignment with local public policy. Stakeholders recognize the STEM Territory initiative as part of public policy.



Domain	Stage	Description
Planning	Early	The STEM+ Territory does not yet have a roadmap for its management. Some projects and initiatives are being implemented locally, but are not necessarily strategically or operationally aligned with the initiative's management.
	Growth	There is a high-level roadmap that includes strategic actions for achieving the defined objectives. Actions to disseminate the roadmap are being carried out in the territory.
	Consolidation	A robust roadmap is in place that includes strategic actions, expected results, evidence, responsible parties, and timelines. The roadmap involves the initiative's most relevant partners and allies. There is broad recognition of this roadmap by stakeholders in the territory.
	Expansion	The territory has a high-level roadmap, a dynamic portfolio of projects, strategic actions, and action plans that are updated on an ongoing basis. The initiatives carried out in the territory are positioned prominently and play an important role in meeting the objectives and goals of the STEM Territory. The planning process in the territory is open, ongoing, and participatory.
Communication	Early	There are no strategies for strategically positioning the STEM+ Territory. The initiatives and actions being promoted are communicated on an ad hoc basis. The initiative is not widely recognized by stakeholders in the territory.
	Growth	The STEM+ Territory has strategies for disseminating and positioning the actions implemented under its agenda. Information is managed in accordance with guidelines for coordinated action and in a way that fosters communicative synergies. The STEM+ Territory has its own brand identity.



Domain	Stage	Description
Comunicación	Consolidation	Positioning strategies for the STEM+ Territory are present and under implementation, including actions for managing diverse stakeholders. The initiative has its own active channels and guidelines for managing and circulating information. Communication metrics are in place for the territory.
	Expansion	The STEM+ Territory initiative and the value it generates are recognized by the education, science, and technology ecosystems in the territory. Positioning strategies are revised and updated on a regular basis. Relationships with regional (Latin American) STEM education/ Education for sustainable development ecosystems are evident.
Sustainability	Early	The STEM+ Territory is beginning to formulate actions to ensure the sustainability of the strategies it advances.
	Growth	The STEM+ Territory has a medium-term sustainability plan that includes strategies and mechanisms for project continuity, the roles of actors involved, and measures to deal with transitions of key stakeholders (such as government administrations, for example).
	Consolidación	The territory has effectively demonstrated its medium-term continuity, has endured transitions, and has a variety of project financing alternatives that involves robust coordination with territorial actors.
	Expansión	The STEM+ Territory is self-managed through the coordinated work of the actors participating in it. There are several sources of financing for project development: technical and financial cooperation, private sector contributions, public budget allocations, among others. The initiative's continuity and pathway for growth are evident, despite changes or transitions in actors and processes.



3.2. Maturity level descriptors. Dimension: Collaboration

Domain	Stage	Description
Governance	Early	The STEM+ Territory is essentially led by one or two organizations that have taken the initiative to build the strategic elements of the territory. No clear guidelines for collective leadership are in place yet.
	Growth	There is a basic (formal) governance structure made up of allies interested in and capable of advocacy, who participate regularly in dialogues that are strategic for the territory. Simple decision-making processes are used.
	Consolidation	The STEM+ Territory has a governance structure that is growing stronger every day and defines the guidelines for collective leadership. There are clear decision-making mechanisms, multi-actor participation, and defined roles and responsibilities aligned with the territory's strategic vision.
	Expansion	There is a horizontal governance structure that includes the participation of actors from different social sectors. This governance structure helps maintain and strengthen decision-making mechanisms and instances that have a high impact on the strategic focus and on the development of initiatives in the territory.
Intersectoral cooperation	Early	The STEM+ Territory initiative has one or two key allies to support its management. The territory has no stakeholder management strategies in place. Collaboration occurs mainly through organic/ad hoc interactions among actors.



Domain	Stage	Description
Intersectoral cooperation	Growth	The territory has mapped actors and stakeholder management strategies. Alliances (tacit or formal) have been established to implement projects or initiatives that further the objectives of the territory.
	Consolidation	Alliances for managing the STEM+ Territory have been strengthened and expanded. There are clear mechanisms for engaging with new actors and developing coordinated projects. Stakeholders with the greatest potential to influence the territory's agenda are actively engaged; this includes the active, relevant involvement of governmental bodies.
	Expansion	An open ecosystem of collaboration around STEM education/Education for sustainable development is in place. Dynamic stakeholder mapping is available and new alliances with regional (Latin America) and global actors are on the rise. The territory promotes initiatives such as social impact funds and consortia.
Communities and networks	Early	Existing instances of collaboration in the territory such as learning communities, educational leadership networks and others have been identified. (Recognition).
	Growth	Actions undertaken as part of the territory's agenda and those undertaken in communities and networks of collaboration and learning are linked. The contributions and role of communities are defined in the territory's agenda. (Active participation).
	Consolidation	The STEM Territory promotes the creation of opportunities for knowledge transfer, the exchange of best practices, and collaborative learning among teachers, administrators and other actors. (Leadership).



Domain	Stage	Description
Communities and networks	Expansion	Collaboration and learning communities for STEM education/Education for sustainable development play an important role in the territory's agenda. Teachers, administrators, and other actors are continually participating in updating and managing the STEM Territory's agenda. (Ongoing interaction).

3.3. Maturity level descriptors. Dimension: Collective learning

Domain	Stage	Description
Training	Early	Training available to educational actors for strengthening knowledge, skills, and competencies in STEM education is limited primarily to pre-existing training programs in the territory.
	Growth	The STEM+ Territory has created focused training initiatives to further the requirements for appropriation of the STEM approach that meet the specific needs of different actors in the territory.
	Consolidation	There is a healthy range of training opportunities for STEM education promoted by the STEM+ Territory initiative. These involve educational agents prioritized in the territory's agenda. There is an ongoing training STEM education portfolio aimed at diverse educational agents and led by the territory. These are revised/updated on an ongoing basis.
	Expansion	Most existing training initiatives are based on open education and involve a significant percentage of teachers in the territory. The training scenarios for different actors in the territory are diversified and updated continually by building alliances. Increased access to state-of-the-art resources and strategies is evident.



Dominio	Etapa	Descripción
Practices and Experiences	Early	STEM practices and experiences have been identified and highlighted in the territory, although they may not necessarily be named as such and may be field-specific or only weakly multidisciplinary.
	Growth	As a result of STEM+ Territory management, some practices and experiences have been developed for children and adolescents in educational institutions using the STEM approach.
	Consolidation	The territory has initiatives focused on the STEM approach—including science and technology clubs, hackathons, demodays, olympics, and similar—that are aimed at children and adolescents, are supported or implemented by actors from the alliances formed and impact the development of lifelong learning experiences.
	Expansion	The territory has promoted the replication and scalability of successful STEM practices and experiences in educational institutions throughout its range of action and even among those in other STEM+ territories.
Learning environments	Early	Different learning scenarios have been identified in the territory and actions to coordinate the territory's agenda with the organizations involved are being furthered.
	Growth	The STEM Territory is driving the coordinated development of STEM learning experiences in diverse settings. Organizations responsible for managing spaces such as museums, science centers, and libraries are beginning to engage with the STEM+ Territory agenda.
	Consolidation	Effective management of the STEM Territory has expanded and encouraged the use of teaching and technological resources, the transformation of spaces, and, in general, strategies to strengthen learning environments in the territory.



Dominio	Etapas	Descripción
Learning environments	Expansion	As part of managing the STEM+ Territory, a multi-scenario learning ecosystem has been consolidated to implement educational experiences. That ecosystem includes educational institutions, including higher education, science centers, museums, libraries and other spaces that possess the teaching resources required for STEM experiences.
	Early	The STEM+ Territory adopts practices to take advantage of available knowledge assets in order to further the initiative; these include use cases and model projects, among others.
Knowledge management	Growth	The STEM+ Territory conducts basic exercises for systematizing experiences or projects implemented in the territory, and disseminates them locally.
	Consolidation	The STEM+ Territory has conducted processes to systematize experiences or projects with the greatest impact on the territory and has created opportunities for knowledge transfer at the local, national, or international level.
	Expansion	The territory continually conducts exercises to systematize good practices and lessons learned, enabling it to lead knowledge transfer processes and make regular adjustments to aspects of territory management. As a result of these systematization exercises, the territory has been recognized as a benchmark of good practices.



3.4. Maturity level descriptors. Dimension: Monitoring and evaluation

Domain	Stage	Description
Monitoring	Early	There are no defined structures or mechanisms for monitoring the territory's agenda.
	Growth	The territorial management body has defined basic parameters to follow up on local actions, primarily monitoring the implementation of actions that are part of a plan.
	Consolidation	The basic structure in place has become more robust in terms of methodology and instruments. This structure has begun to take the form of a measurement system that allows ongoing data collection and processing.
	Expansion	The territory has a structure and mechanisms in place to monitor the actions deployed as part of its agenda. The existing arrangement or system enables information to be collected, processed, analyzed, and then made available to the initiative to enable evidence-based decision making.
Evaluation	Early	The territory has a relatively unstructured idea of evaluation processes and their impact.
	Growth	The territory is planning to evaluate the strategies implemented by analyzing educational outcomes and community participation.



Domain	Stage	Description
Evaluation	Consolidation	Key indicators have been established to evaluate the progress and success of the actions implemented, in order to ensure that they are aligned with the territory's objectives.
	Expansion	Both quantitative and qualitative results of the programs and strategies implemented in the STEM+ Territory are available, thus enabling progress to be assessed against the objectives established in the region.

4. Maturity model tools

As a first step in adopting the STEM+ Territories Maturity Model, an online form was created to allow participants to conduct a self-diagnosis of the conditions or features characterizing STEM+ Territory initiatives at a given time.

Each response chosen in this instrument is scored on a range and scale defined for each domain, which in turn allows each domain's maturity level to be determined.

The score and estimated maturity level of each domain is calculated as the sum of points assigned,





according to the answers provided on the form. In turn, the score and maturity level of each dimension is calculated as the average among the domains that comprise it. The final score and maturity level corresponds to the average score for each dimension.

The form has approximately 80 questions with multiple closed-ended responses to choose from.

4.1. Recommendations for using the diagnostic tool

The form described in the previous section is in no way intended to be an instrument for evaluating the development of a STEM+ Territory. Instead, it is a tool that uses self-diagnosis to evaluate the characteristics present in the domains and dimensions of the maturity model, as applied to a specific territory, in order to identify opportunities for strengthening each initiative. As such, it does not allow for a comparative analysis among territories.

In order to make the best use of the instrument and its results, the following recommendations should be followed:

01.



Understand the model: The first step is to understand what the proposed maturity model consists of, what its purpose is, and how it is structured. To this end, we recommend reviewing both this guide to the STEM+ Territories Maturity Model and the descriptors of the maturity levels for each domain.

02.



Become familiar with the diagnostic tool: To get the most out of the model, it is important to become familiar with the self-diagnostic instrument and explore how the questions and response options for each domain are formulated. It is recommended that respondents access and test the instrument before officially completing the form. The instrument can be used multiple times, so there is no limit on testing.



03.



Collective exercise: The next step is to analyze each question and possible answers provided in the form as a team, and for this we recommend convening a (small) group of people who are involved in the management of the STEM+ Territory and who possess detailed knowledge of the territory, and set aside a day to fill out the instrument and analyze the results.

04.



Action plan: Because the main purpose of the maturity model is to identify opportunities to strengthen the various STEM+ Territories initiatives, we recommend that the results obtained be used as a guide for building a proposal that prioritizes actions to be pursued in both the short and medium term.

Link to the form: <https://goo.su/WraEn>



4.2. Report on results

Once the instrument has been completed, you will have access to a dashboard that will show the results of the assessment that the STEM+ Territory managers made of their own initiative. This dashboard offers information at different levels:

- General information about the maturity model.
- General results of the territory's maturity level.
- Specific results for each dimension and each domain.
- Suggested actions to strengthen management of the territory in each dimension, with a view to advancing from one maturity level to another.

The results shown on the dashboard should be analyzed in context; as this is a theoretical maturity model (built from observations of actual initiatives), some readings or recommendations presented on the dashboard may not be applicable to all contexts in the same way.

In turn, the STEM+ Territories model should be worked on in conjunction with the territorial management kit that, besides strengthening actions, provides tools and additional resources for managing territories.

Link to the report on results: <https://goo.su/0B6NsM>



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