



# Declaratoria STEM

In **Movimiento STEM+**, our strategic objective is to **forge invincible talent** ready to face the **challenges of the 21st century**.

Since the 1970s, in educational settings, there has been a reflection on the need to establish training strategies **that promote the integration of different disciplines** of knowledge and strengthen, among others, **the acquisition of cognitive skills**, such as critical thinking and problem solving in girls, boys, adolescents and young people.

The world has sought the implementation of an education that can meet current requirements, **adapting the qualification of human talent** to these changing and evolving needs, emphasizing the role of **creativity as a fundamental quality** to promote the development of **science, technology, engineering, and mathematics** in the most imaginative and innovative way possible, in order to solve the problems of our world.

Thus, **STEM Education** emerges as the possibility of integrating science, technology, engineering and mathematics in school education to seek interdisciplinary learning based on projects, which encourages inquiry so that students with **STEM training** become innovative, capable of establishing meaningful connections between school, their community, work, and real-world problems.

"The acronym **STEM was first introduced** by biologist **[Judith A.] Ramaley**, member of the National Science Foundation of the United States of America (NSF). This scientist was the architect of the 2001 reorganization of the words that made up an old acronym, SMET, which was used throughout the 1990s to refer to the fields of science, mathematics, engineering, and technology. (Bustío, 2019, p.7).

Later, the **STEAM Approach** is proposed, in which the *A* represents the *Arts*, acknowledging their role in interpreting science and technology, and highlighting their presence in all aspects

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of daily life.

"The term **STEAM** was used for the **first time by [Georgette] Yakman in 2006**, whose proposal focuses on a new educational theoretical framework that places technology and science in a context in which they are interpreted through the arts and engineering" (Bustío, 2019, p.7).

Now new acronyms have emerged such as **STEAM+H** and **STEM+E** to make explicit the importance of the Humanities and Entrepreneurship as central components for the construction and application of knowledge, in addition to acronyms that emphasize disciplines that are in STEM, such as **STEM+M**, which focuses on medicine, or **STEM+C**, with a focus on computer science, among others.

In **Movimiento STEM+** we recognize that all disciplines such as **the arts and humanities are broad fields that deserve their own curricular space** in an educational project, for which reducing them to their connection with **STEM** would not be appropriate, however we emphasize that many of them **are key to triggering innovation**. That is to say, **STEM** is strengthened and enhanced by allowing interactions with other fields, among them the arts, business, philosophy and/or humanities.

In **Movimiento STEM+** we have **added the + sign to our logo** to celebrate inter and transdisciplinarity, which allows us to promote all the initiatives and new strategies that arise from **STEM**.



Specifically speaking of the **disciplinary fields**, we will continue to promote the **STEM** areas as the basis of our intervention model. However, in **Movimiento STEM+**, our conviction is that **placing the person at the center**, working **collaboratively** and combining **creative thinking** with the **STEM disciplines** and a **social and inclusive vision**, reinforces aspects such as innovation, design, inclusion, aesthetics, the development of curiosity,

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entrepreneurship, imagination, as well as the search for diverse solutions to humanity's most pressing problems with empathy, ethics, and scientific evidence.

We generated the standard of competence before the **CONOCER** so that teachers from **Latin America** can be certified as **STEM Teachers**. We also developed the **STEM+ Instructional Framework**, which holds **official validity** from the Mexican government, and we hope it will soon influence the educational policy of other countries in the region. This Framework is based on the following educational methodologies: the 5E Model, Project-Based Learning, and Design Thinking. They **place the students at the center** and promote learning experiences in which they **can explore and build** their own definitions of various concepts while interacting with their peers and their environment.

This framework arises from the **STEM Education Framework** of **Global STEM Alliance - The New York Academy of Sciences**, which integrates, among other elements, specific components of the proposal of **Georgette Yakman** and socio-emotional skills according to the **CASEL Model** (Collaborative for Academic, Social and Emotional Learning). The **STEM competencies and socio-emotional skills** included in the STEM approach are:

## STEM Competencies:

- Critical thinking
- Problem solving
- Creativity
- Communication
- Collaboration
- Data literacy
- Digital literacy and computer science

## Socio-emotional skills:

- Self-awareness
- Self-management
- Social awareness
- Relationship skills
- Responsible decision-making

On the other hand we have **scientific evidence** of the **transformative power of STEM Education**, which contributes to the following **strategic axes** (Movimiento STEM+, 2020):

- **Inclusion with a gender perspective and a focus on women:** We align ourselves with the Women's Empowerment Principles (WEPS) of UN Women, and collaboratively

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carry out tangible and intentional actions to generate enabling environments for women's integration, continuity, and leadership in these areas.

- **Workforce Development for the Fourth Industrial-Technological Revolution:** We address the mechanisms and strategies for developing 21st-century skills and promoting access to the opportunities offered by this Revolution in the labor markets, with special emphasis on priority sectors and quality jobs.
- **2030 Agenda with a focus on the Environment:** Through our actions, we contribute to the promotion of STEM skills, which are transformative and develop a sense of agency to solve environmental, economic, and social challenges.
- **Innovation and Entrepreneurship:** The implementation of our pedagogical model and the strengthening of disciplinary learning promote innovation and entrepreneurship capabilities. We also support collaborations with key stakeholders to energize the environments where STEM talent can thrive.

We constantly strengthen our actions to carry out regional initiatives that **promote** an **engaged, empowered, and globally responsible citizenship**.

**In Movimiento STEM+ we believe in:**

**STEM for everyone, leaving no one behind!**



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