

IX International Congress on Innovation in Education**Institute for the Future of Education, IFE, of TEC de Monterrey, México****“STEM Education and Citizenship: Red STEM Latinoamérica – a purpose
driven network”**

January 16th, 2023

Dear Ladies and Gentlemen

Thank you very much for the invitation! It's a pleasure and great opportunity to speak at the International Congress for Innovation in Education, organized by the Institute for the Future of Education, IFE. It's an honor to join you, and to be in such esteemed company with all the attendees of this very important international event. The timing beautifully coincides with the International Day of Education (on Jan 24) that celebrates the role of education for peace and development. Our foundation's work aligns with this, promoting competencies, structures and perspectives for sustainable social development focusing on three global social challenges: access to essential services, creating connected societies, and protecting the climate along with supporting sustainability. Together with our international partners, namely in Latin America, we are creating educational STEM projects and networks on a co-constructive basis – and, in so doing, are producing local solutions to global challenges. The thread of education runs throughout our joint scope of work. Education is a human right – at the heart of other developmental challenges. Without inclusive, equitable, quality

education and lifelong opportunities for all, we will not succeed in achieving other goals like gender equality or breaking the cycle of poverty.

Red STEM Latinoamérica network

Though I'm attending this Congress in-person for the first time, my colleagues and network partners have been working in the entire region for many years now through our Red STEM Latinoamérica network – which brings together representatives from over 180 Latin American universities, educational institutions, and NGOs from 14 countries including Mexico. As Red STEM Latinoamérica, we seek to contribute to the educating of committed, responsible, and empathic citizenship, that leads to active collaboration in the building of sustainable communities and territories.

In this understanding, we promote STEAM Education as an innovative path in order to understand the present and foster the future. Through our regional office in Santiago de Chile and together with our broad network in Latin America, we work extensively with students, teachers, educational authorities, and the civil society. We understand the pulse of the communities: their aspirations, the various hurdles and also their opportunities.

Our shared vision on education addresses extremely relevant topics like innovation, nurturing STEM education in an interdisciplinary approach and enabling digitization in education. We live the idea that transformation in education is relevant, that we should stand together and shorten ways, build bridges and find effective means of collaboration to fight for diminishing the educational and social divide.

That means saying yes to innovation, to not leaving anyone behind, and to driving forward education as a lifelong process.

This is Red STEM Latinoamérica: a network of networks, committed to combining capacities, sharing best practices and boosting collaboration – built on a strong common purpose to improve access to quality education.

Relevance of STEAM

We are keen to join forces with you: That is, strengthening cross-border bonds to enhance the education fraternity and complement your initiatives with our expertise and field experiences on STEM education to pave the way for sustainable education in Latin America. We have witnessed that the STEM learning approach addresses global issues directly related to the 2030 Sustainable Development Goals. As the Industrial Revolution 4.0 is gaining momentum and influencing every aspect of our everyday lives along with the quantum leaps in technology - innovation in education is the absolute need of the hour! STEM education helps young people to shape a creative and critical thinking mindset, to intrinsic problem-solving abilities, critical thinking skills and a sense of curiosity – qualities that are of the utmost importance to face the future. In saying this, it is not my intention to focus on VUCA times, but rather to highlight people's capacity to build resilience and the tremendous potential of thinking and acting together.

Successful STEM education at the local level relies on two things: incorporating the demands and unique circumstances of each region and providing an effective approach along the entire education chain. That is why all of us are here today, to share our insights and knowledge on applying innovative methodologies in education. Our experiences prove that innovation is at the very root of the high-quality STEM approach. It prepares the young generation to meet the challenges of our times and understand interconnections between climate change, health, digitization, and energy supply - all topics based on STEM subjects.

At the Siemens Foundation we have developed special approaches on each of these crucial topics. For example, on STEM and climate change education, we partner OCE and local communities to develop real-life and scientific teaching and learning resources on climate change education.

Our STEM education approach finds resonance in the UNESCO 2021 flagship report, which calls for “reinventing education”, as some of today’s teaching and learning methods are outdated and counterproductive. It argues for a new "social contract for education" – an agreement between members of a society to work together for common benefit. It calls for a pedagogy that prioritizes cooperation and solidarity and calls for a shift in curricula towards ecological, intercultural, and interdisciplinary learning.

Forging this contract begins with a shared vision: It means working together to evolve the debate on learning, in order to repair past injustices and enhance our capacity to act together for a more sustainable tomorrow. As we face broad challenges to the future of humanity and our planet itself, it is now up to us to debate the questions the report raises – I invite everyone here today to do so consciously.

STEM network in Latin America

Coming back to our regional alliances in Latin America, we follow the motto: “Together strengthening STEM education through innovation and international collaboration”. I’m extremely proud to share that our network has taken strides in integrating scientific and technological education throughout the entire educational chain of our partner countries.

Complementing this, our STEM Territory Latin America initiative supports local education systems in developing a STEM education learning environment. In this way,

schools, teachers and students work together to develop tools to respond to the issues facing their communities, anticipating potential future challenges and developing solutions to address them.

The territorial and collective nature of the model generates a sense of responsibility and commitment to the community. Indeed, the success of this initiative proves how invested the education community is on this issue. In Mexico, a STEAM Territorio has been established in Toluca for the State of Mexico. This adds more power to the regional alliances by combining a single yet strong voice to influence the education agenda and to better coordinate their project work.

Innovation in Education

As a result of this hands-on and community approach, since 2021, we've developed 14 innovative projects under the umbrella "STEM for Innovation in Latin America Education Initiative" in collaboration with stakeholders from the different regions of Latin America. By doing so, we've generated educational resources, tools for teacher training, and opportunities for institutional networking to improve pedagogical approaches in the very diverse contexts and conditions of high-low and no connectivity. It brings together a dynamic set of resources developed from and for Latin America under the Open Educational Resources format and hosted on CREA – a central platform for all open educational media for Latin America. Free and open, the content is accessible to all and can be modified and shared by teachers. It currently contains more than 1,500 materials, and there are frequent updates to add fresh and exciting offers for varied and attractive STEM teaching.

To name another pioneering result of this initiative: The educational program "Solid Edge for Social Impact" is a certifiable software, developed by Siemens, to design and prototype products, which heavily contributes to finding concrete solutions to problems

faced by vulnerable communities. Teachers and students from Mexico, Argentina, Colombia, Peru, Guatemala, and Chile have been trained to use this software to create innovative solutions for their lessons.

This is what we can call “taking educational innovation to the next level” – promoting education that is context- and open resource-based, flexible, and social impact-driven. Having a system that is responsive and holistic. Our educational programs aim to support holistic education in schools, which has a positive impact on families and communities. This way, we strengthen competencies for students – now and in the future - supporting them in their professional orientation and creating economic perspectives.

Importance of networks

In Germany, one of our primary focuses on STEM is strengthening a "culture of digitality" in schools. With formats that meaningfully link analogue and digital learning, by broadening the view beyond the technical aspects of digitalization and promote the acquisition of key future skills. The prime example of our STEM education innovations is the "MINT Hub Siemensstadt Square" in Siemensstadt in Berlin. It operates like a “Think and Do Tank”, facilitating knowledge transfer between local and global educational practitioners with the idea to embed sustainability and a positive digital culture in the neighborhood. Here we’ve adopted an all-encompassing teaching approach to STEM from kindergarten to apprenticeship. This year, with full speed ahead we plan to extend its footprint to five more continents.

We’ve achieved something similar with the International Dialog on STEM Education or IDoS. Currently, this network has six peers including the Office for Climate Education, working collaboratively to push for early STEM education from the individual peer’s networks to weaving a global web of networks for a seamless exchange of best

practices. Their new learning paper explores how networks can promote cooperation and professionalization in early STEM education.

More specifically, when actors of early STEM-education collaborate in networks, they have an exceptional potential to bring about change that exceeds the sum of their individual parts. Especially when facing complex issues, networks can be the key to generating a sense of commitment and responsibility within communities and thus facilitating collective action. In short, networks pave the way for sustainable development and lasting change.

I'm a strong believer that through networks we can achieve anything and everything and find a way even to the biggest challenges that we are currently facing on a global level. The fact that we are here today is a testament to so. As the education fraternity you are strengthening innovation in education through the implementation of your projects in different parts of the world. Experiencing, learning and exchanging with each other as sparring partners!

And we are in a good place and the timing is conducive too. As we embark on the new year, we regroup to take a stalk of our agendas, let's be mindful of the clock, it is ticking fast! Think of it, we are just seven years away from the deadline the United Nations set for the realization of the Sustainable Development Goals - by the year 2030. This should inspire us to get our act together and put more force in our actions.

We at the Siemens Stiftung, and also Red STEM Latinoamérica, reaffirm our unwavering commitment to achieving this Agenda and utilizing it to the full to transform our world for the better by 2030. I'd like to conclude on this note by thanking everyone again for this platform and your precious time. I look forward to many insightful discussions with you during this Congress.

