Unlocking demand for social innovation: the case of Telefónica Foundation in promoting STEM vocations in Spain

This is the [seventh article in a series about European philanthropy](). *The series is published as a collaboration between* The Philanthropist *and The Lawson Foundation.*

To bring about change and entrench it in our societies, there is a need for more social innovation at scale. It is possible: history is rich in examples of social innovations that have become part of our daily lives. Yet, long-lasting and deep changes are often elusive, and many innovations fail to reach the necessary scale, meet the level of need, and solve the problem. This is why engaging with social systems, pervading all their parts, and affecting interrelationships and interdependencies has proven to be the most effective way to approach social change.

Developing and growing innovations with the capacity to impact and satisfy all addressed needs in their entirety is, indeed, the goal of many philanthropists and foundations around the world. This article introduces the approach the Telefónica Foundation, one of Spain's biggest and most relevant foundations, took to solve a chronic social challenge in Spain four years ago. It provides an insight into the unique role the foundation managed to play by convening all the actors in a system around the need to find a lasting and systemic solution to a joint challenge. Taking new risks and moving beyond the traditional transactional approaches of the philanthropic sector, Telefónica Foundation explored the potential of integrating capacities for social transformation.

The spark

In 2013, Telefónica (the largest telephone operator and mobile network provider in Spain, and one of the largest in the world), like many other companies in the scientific and technological sectors, was struggling to fill its STEM (science, technology, engineering and mathematics) positions. Spain did not have enough STEM graduates to meet the rapidly increasing demand, while, at the same time, youth unemployment rates had risen to 50%.

So, its foundation decided to address the issue. Some top-down initiatives by various institutional stakeholders had not succeeded, and local scattered education initiatives remained marginal anecdotes that hardly surpassed the barriers of their local contexts. Telefónica Foundation decided to change this.

In partnership with UpSocial, an international social innovation firm based in Barcelona that provided a scaffolded methodology, Telefónica Foundation convened the relevant stakeholders, unlocked the demand for innovation, researched and identified the best proven innovations worldwide, and supported the process of adapting, testing, and scaling them up.

Framing the challenge

"If I had only one hour to save the world, I would spend fifty-five minutes defining the problem, and five minutes finding the solution.'[1]

Telefónica Foundation quickly identified the obvious market failure: the offer of employment opportunities didn´t match the available applicants. While the rate of young unemployed people kept increasing, it also became more and more difficult for employers to fill in new work positions created for STEM career graduates. Further research to document the challenge showed that the number of young people studying for STEM careers kept falling, and according to Eurostat, only 13 of every 1,000 graduates in Spain had completed studies in those fields.[2] This was also noticed at a European level,[3] around the same time that experts predicted that expected changes in the economy and future of work would further increase the demand for STEM professionals on the continent.

Additional research in Spain showed that only 7% of Spanish 15-year-old students had the possibility to access scientific and technical careers based on their knowledge and skills,[4] and 22% would not reach the basic math level to be able to operate in a modern economy.

However, the fact that most talented student did not choose technological and scientific studies as an option was only the tip of the iceberg. Evidence has shown that the problem starts much earlier, in primary school, when children label themselves as "not good for or unable to understand math." Many children fail math because they come to believe they are not good at it. Once students lose confidence in their math skills, failing becomes a self-fulfilling prophecy. This has dramatic consequences considering that mathematics comprehension and abilities represent the most effective predictor of student's future academic success. Math was therefore considered a critical lever of change. [5]

Another critical factor to be addressed was the belief that basic abilities, intelligence, and talents are fixed traits. Children and young people who believe that one is born with a certain character, intelligence, and creative ability behave in education and life as if these givens can't change in

any meaningful way. A "fixed mindset" prevents children from achieving their full potential. The shift towards a "growth mindset," or the belief that intelligence and proficiency can be developed, was defined as another decisive lever to solve the challenge.

Facts spoke for themselves. The lack of STEM graduates needed to be addressed at a much earlier stage. Tackling the root cause efficiently and successfully required a new systemic approach, with all key actors acting in coordination at different stages in our children's education.

Generating demand

The starting point to generate demand is a social recognition of needs that are not being adequately met. This is why Telefónica Foundation, an influential (but also neutral) institution with a convening capacity, and UpSocial, a well-known and trusted social innovation catalyzer, began the process by summoning interdisciplinary stakeholders for a workshop in Madrid. The purpose was to bring together public administrators and philanthropists, the private sector and NGOs, teachers and investors, school principals and policymakers, to jointly define the framing of the challenge and design the levers of change. In short, the aim was to make demand for innovation explicit by a group of highly relevant people who together brought decision-making power, resources, and specific knowledge to the table.

The agreement at the workshop was to shift the focus from the lack of STEM graduates to the promotion of STEM vocations. Reframing the challenge allowed for a more systemic, long term but also realistic approach to problem-solving. It was also decided that the choice to study a career depended on the following four strongly-interrelated levers of change:

- Educational factor: level of skill and interest showed by students in STEM subjects;
- Psychological factor: promoting the active involvement of students in recognizing their skills and interests and matching them with those required in STEM careers;
- Informative factor: knowledge of growth and job opportunities in the scientific and technical fields; and
- Social factor: social perception of scientific and technical professionals.

There was general agreement to globally search and identify proven innovations that had a positive impact on any of these four factors, and that could be adapted and adopted in the Spanish context. Moreover, it was acknowledged that the implementation of this new, innovative, comprehensive approach required coordinated and aligned action between all involved parties.

The research and selection of proven innovations

At this point, UpSocial started to research proven innovations around the world. Thousands of initiatives that have an impact to solve specific social challenges already exist but remain unknown or as local anecdotes. Initiatives would have to respond effectively and efficiently to the posed challenge, in line with one or more of the mentioned levers of change, and be non-context specific to potentially be replicated and scaled up in the Spanish context.

More than 100 innovative initiatives with documented evidence of success and development were analyzed. Some standards of analysis were defined to understand the strength of the

evidence (which varied significantly), the degree of documentation that would facilitate replication, or the enabling factors that made the innovation succeed. The research ended up creating a shortlist of the 20 most powerful and suitable innovations.

Then Telefónica Foundation reconvened the group of stakeholders as a jury to make a joint decision on the projects to be implemented. The jury analyzed all 20 shortlisted innovations, assessing the pertinence and adequacy of the innovations, considering the potential impact and the ability to be implemented in the local context, as well as the degree of innovation and the potential of scalability.

The team selected four of the 100 identified innovations for implementation. The top 100 innovations to promote STEM vocations were presented in a publication, which is one of the most downloaded publications in the history of the Telefónica Foundation.

Implementation and outcomes

The four selected innovations with most potential were:

- ScienceLab from Germany, which provides scientific learning and outreach for children aged 4 to 10, based on their natural curiosity to understand what is happening around them. It "turns children into protagonists of their own scientific discovery and education process," applicable in and outside school.
- Apps for Good from the United Kingdom and Brazil: Students in higher education learn to design apps to solve real-world problems that matter to them. With the aim of building a new global generation of problem solvers and makers, it motivates adolescents to develop their entrepreneurial and programming abilities as well as skills in problem solving, creativity, communication, and teamwork.
- STEMNET from the United Kingdom is a platform that involves schools, teachers and professionals in STEM education support activities. It enables young people of all backgrounds and abilities to: meet inspiring role models, professionals from STEM careers who promote STEM subjects in original, creative, and practical ways; understand real-world applications of STEM subjects; and experience hands-on STEM activities that motivate, inspire, and create learning and career opportunities.
- JUMP Math from Canada is a math program for schools using "guided discovery" as a methodology for teaching mathematics from kindergarten to Grade 8. Lessons are based on a series of Socratic questions, challenges, and activities which introduce new information in manageable steps, with enough practice and review for students to consolidate what they have learned. The process brings out the maximum performance from all the students and their teachers as instructors.

The teams behind the four innovations were invited to Spain to present their projects and meet with key stakeholders interested in piloting their programs in the country. Telefónica Foundation and La Caixa Foundation, the two biggest foundations in Spain, partnered to pilot two of the programs at the national level: JUMP Math and Apps for Good were both implemented in more than 80 public schools the following year. An external evaluation was commissioned to a prestigious university. The outcomes were very positive and later gave birth to a full independent implementation at scale.

JUMP Math Spain was created as a social enterprise that translated and licensed the program

in Spain and it reached more than 30,000 students in 2018 with excellent math results among them. Apps for Good had many parallel developments: it became a public program in Catalonia under the name of mSchools, and it has since been promoted by Fundación ENDESA in other parts of the country, reaching more than 7,000 children every year.

The partners working with STEMNET and ScienceLab failed to find an appropriate match with a Spanish partner to pilot it.

Lessons learned

The experience of the partnership between Telefónica Foundation and UpSocial was repeated in 2016, with the launch of another education challenge. This could lead the reader to think that the process validated all hypotheses and that the success in the implementation of half of the innovations demonstrated its value. However, reality is far more complex. Here are some of the lessons learned.

- Unlocking demand is indeed a game-changer: having a need does not necessarily mean that there is demand for innovation. Social and education innovators have often ignored the power of generating effective demand as a driving force for change. There is traditionally more emphasis on the supply side, to make workable and useful innovations grow and scale up. But there is not enough emphasis on the need to make a system demand more efficient and lasting solutions. If anything, this process has shown the success of an aligned group of stakeholders jointly exploring innovations to solve chronic challenges.
- Longer-term approaches to social change work: the Spanish philanthropic sector has traditionally created short-term transactional relationships with NGOs and other social service suppliers. Annual grants generally produce poor outcomes and distort the real dimension of the challenges we face. This experience showed that integrating capacities in long-term partnerships, with stakeholders who understand each other's role, tolerate and consider legitimate the different interests and objectives, and coordinate agendas and steps have produced much better results, despite the additional effort it implies.
- Capacity to implement and capacity to transfer effectively: Finding a team or an organization/institution with the capacity to implement nationally is as important as finding an innovator that is capable of documenting and transferring its key elements. The ability to design win-win arrangements between the parties appears critical.
- How change happens: an intentional systemic approach appears to be the most effective approach to social change. This is about making a system capable of producing better outcomes more efficiently at scale. It implies working around power structures in society and shifting roles and relationships to make this power structure change. But change also happens by making the adjacent possible. Some innovations make smaller changes, but once these happen, new doors towards systemic innovations appear and open. An example of this different way of approaching and creating unexpected systemic change was the implementation of JUMP Math in Spanish schools. By introducing a math program, schools and teachers started asking new questions about their roles and made systemic innovations possible. In the words of science author Steven Johnson, "The strange and beautiful truth about the adjacent possible is that its boundaries grow as you explore them. Each new combination opens up the possibility of other new combinations."[6]
- Investing in rigorous experimentation and in scaling innovations works: Telefónica

Foundation was a pioneer in investing in experimentation and adapting and adopting education innovations. In Spain, there is still a general notion that this is a risky approach to seek change. Telefónica Foundation believes it is riskier to keep on doing the same things that do not have a transformative impact, over and over again. Their experience has shown that carrying out this process with the required rigour, while documenting it to be able to replicate the results, grants the best chances for social justice.

Conclusion

At the heart of this story lies the growing evidence that the philanthropic sector can play a catalytic role that government, the private, or the social sectors cannot. It did so by changing the usual short-term approach of philanthropy, taking risks, opting for long-term transformation, and realizing that change will only be systemic if the solutions are multidimensional and propelled by diverse and complementing actors.

Through the convention of all the stakeholders with different interests and viewpoints around a non-threatening table, foundations could accelerate the co-creation of new scalable and conclusive solutions and help redesign more appropriate policies and financial arrangements. Foundations could also transform roles and relationships in complex systems where actors stop working in parallel and start integrating their strengths and capacities. Coordinated agendas, visions, and next-steps, could lead to great changes, such as promoting a new generation of Spain's students with STEM vocations.

[1] Quote attributed to Albert Einstein

[2] Eurostat, *Science and Technology Graduates by Sex, 2012* http://epp.eurostat.ec.europa.eu/portal/page/portal/ education/introduction

[3] Wilson, R.A. (2008), The Demand for STEM Graduates: Some benchmark projections. CIHE/ETB/DIUS http://www.cihe.co.uk/category/themes/policy/stem

[4] http://www.oecd.org/pisa/keyfindings/pisa-2012-results.htm

[5] This work on Fixed Mindset and Growth Mindset was based on the work by Carol S. Dweck:

Mindset: How You Can Fulfil Your Potential

[6] Johnson, Steven (2010) "The Genius of the Tinkerer" in The Wall Street Journal https://www.wsj.com