Using design and entrepreneurship for inequality reduction in Colombia

In collaboration with

Master thesis
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All pictures used in this report were taken during the
field experiment

This thesis is fully illustrated by the author, to make the
reading more enjoyable and understandable

What you need to know

Abstract

This project addresses the inequality gap that exists between the city and the countryside in Colombia in terms of education, access to opportunities, and technology literacy. By using design and entrepreneurship together with the "Más Por TIC" foundation, we developed the program "1,2,3 x TIC", an entrepreneurship program for rural adolescents for providing them with an entrepreneurial mindset whilst they learn about updated digital tools. Being a program that aims to be the entry point of rural youths to the "Más Por TIC" network, to ensure the sustainability of the NGO, and ensures the possibility of providing its services to the countryside in the future, creating knowledge from the communities for the communities.

Understanding and approach to the challenge:

Colombia is a highly unequal country, especially when comparing the countryside and the city. It however has a lot of potential thanks to its people, and resources. Design and entrepreneurship emerge as potential approaches to help reduce inequality and provide communities with the capability of developing their own ecosystem where innovation and entrepreneurship can emerge. For applying this combined approach, the method for the strategy development, which works as the foundation, is presented in this chapter.

Strategic proposition:

"Más Por TIC" becomes a rural community knowledge hub. The program "1,2,3 x TIC" will be a space for educating adolescents in rural areas, so they develop an entrepreneurial mindset focusing on generating soft skills, whilst they are provided with access and knowledge to updated digital tools. This strategic proposition has some specificities and steps towards achieving the expected impact. For this, a future vision, a strategic road map, and a tactical roadmap were developed, to guide the organization towards creating this desirable future.

Prototyping and testing process:

Every good idea is only an assumption of possible success. And to reduce uncertainty, it needs to be prototyped and tested. A field experiment in two possible contexts was planned and executed based on an initial iteration of the strategic foundation, the tools, the structure, and the contents. Using them within the context of an entrepreneurship program for rural youth to provide them with an entrepreneurship mindset and technology literacy.

Program proposition:

An entrepreneurship program for rural adolescents of 5 weeks and 15 sessions is part of the emerging proposal of this project, in which adolescents will go through a gamified project-based challenge, where they will create their own business idea, whilst they develop entrepreneurial soft skills and are equipped with updated technological tools. In this program, the teachers play a principal role, where the adolescents are not the only direct actor to be impacted, but the whole way of learning in these areas is expected to develop and get enriched.

Experiment Data analysis:

Lots of learnings are to emerge when creating pilots and testing rounds for any kind of product, service, or concept. In this case learnings about the strategic proposal, general dynamics, methodology, facilitation, and more were gathered. In addition, to understand in a deeper and better way the types of students that can be involved in the program student personas were constructed. This process was the result of a clustering process for themes emerging, taking a qualitative data analysis as the approach to tackle all the emerging information.

Conclusion:

Entrepreneurship education in youth is a potential tool for reducing poorness and inequality, but it requires time and long-term perspective, together with other systemic interventions in the different contexts to support the emergence of entrepreneurs and innovators in these rural contexts. Design methods showed to be a successful approach towards proposing and developing a strategy and a relevant proposition for using entrepreneurship and technology for social mobility.

"No one can do everything, but everyone can do something"

Max Lucado

Since I came to The Netherlands, and even before, I have always felt lucky because life has provided me with incredible opportunities to keep growing personally and professionally. And so I feel the duty to somehow give back to the world a bit of what it has given me. This, and my high interest in politics, economics, and history brought me to be highly interested in social impact, not only from a giving perspective but in how to use my skills, which in the end resulted in my interest in social design.

This, next to my high interest and involvement in entrepreneurship projects, resulted in this graduation project that you are about to read. A thesis I created together with amazing people who helped me, critiqued me, encouraged me, and challenged me to be better and deliver this piece of knowledge.

First of all, I thank the NGO Más Por TIC, and its director Eliana Camargo for opening the doors to create with them a proposition to try to reduce inequality and exclusion in Colombia. Not only giving me the opportunity of doing the project but actively participating in each one of the stages, engaging and getting excited for every accomplishment on the process. Next to Eliana, I also want to thank all the other members of the organization that actively participated in the project, by giving me an interview, being part of a workshop, or even volunteering themselves to go to the field and execute the pilot test, especially Monica Mendez, Luisa Malaver, Juanita Orjuela and Sebastian Cifuentes.

To my supervisory team, J.C. Diehl and Fátima Delgado, I cannot be more grateful, for guiding me, challenging me, and encouraging me whenever it has been necessary, trusting me but giving me sufficient feedback and guidance to accomplish the goals and impact that it was proposed for this graduation project.

I also want to thank my friends Jann, Melissa, Andrés, Alejandra, Nathalia, Neva, María, Zahra, and Frida for constantly supporting me and helping me, and pushing me so my life was much more than only studying and doing my project; but especially to Frida, who was my teammate not teammate during all the process, and who helped me with amazing discussions and reflections throughout the whole process.

Finally of course I thank my family for all their support and unconditional love, who have always had an exceptional role throughout my whole master's being my moral support and my stand no matter how good or bad the situation can be. This is especially for you, and my compromise to try to build a better place for all of us to live.

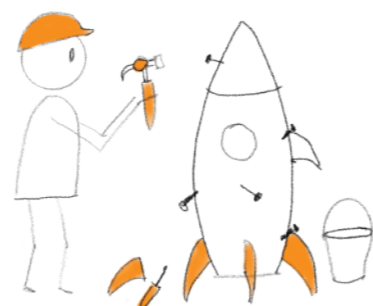# Preface & acknowledgments

Content

Introduction

For understanding this project it is first important to introduce myself and my motivations to develop what you are about to read. I am a Colombian industrial designer with deep connections to my culture and high motivation towards generating impact through my profession. In the last five years of my career including my master's in Strategic product design, I have been involved in entrepreneurship processes from a design perspective. Going from working in a startup as a product manager to creating my own startup together with two friends during my studies at TU Delft. This special interest mixed with the eagerness to make my country a better place to live and make all its potential become reality brought me to this project, and trying to find a way to use design and entrepreneurship to reduce one of the main social issues in Colombia: Inequality (MinTIC., 2020). In this path, I discover the NGO Más Por TIC, which is an organization that aligns with this eagerness and belief toward reducing the inequality that exists within the rural areas and the cities in Colombia.

Colombia is a middle-income country, but this definition tends to be problematic, since it has highly developed areas in the center and north of the country, but also extremely poor areas, in what is called "the profound Colombia". These underdeveloped areas are mainly in the rural country, which at the same time have great potential thanks to its natural resources for mining, eco-tourism, and agriculture (Hahn-De-Castro, et al, 2018). The NGO "Más Por TIC" (Más por TIC., n.d.) has as its mission to "strengthen and empower communities, companies, and people especially in agriculture through the use and exploitation of the information and communication technologies…" (Más por TIC., n.d.) The NGO exists according to the co-founder Eliana Camargo "to close gaps and to eradicate inequalities in developing contexts", so they can become more competitive in the market. Together with the "Loma Alta foundation", they developed a program called "Soy campo soy Cambio [I am countryside I am change]" (Más por TIC., n.d.) which consisted of a 7-week virtual program for young agro-entrepreneurs where young people between 15 and 20 years old received training in entrepreneurship skills combined with design thinking. This program had the objectives of bringing digital alphabetization into rural areas, providing opportunities for life improvement for the participants, allowing the participants to explore who they are through new horizons and possibilities, and mainly, reducing the equity gap in terms of information and opportunities.

"Mas Por TIC" which is the leading organization of this program, was founded in 2015 and currently has 3 permanent employees, 9 part-time volunteers, and a network of volunteers for specific actions. It receives resources from providing workshops to private and public institutions such as public entities and universities, plus being part of the "global giving" (GlobalGiving., n.d.) platform where they receive donations from all around the world. In addition, they also provide services around digital tools, and digital marketing involving volunteers and people from the rural communities to different types of private clients. "Soy campo soy Cambio" had its second version in 2021, in this version, it was reframed to be a program for educating digital entrepreneurs, focusing on digital content creation for becoming "rural influencers and communicators" and it is a program that is constantly re-framed and enhanced with the learnings from the previous versions.

The alliance with "Loma Alta" foundation ended in January of 2022, entailing an opportunity for the program to be restructured, and work as a strategic foundation for the present and the future of the organization. This opens the door for a strategic proposition at the same time that it becomes a perfect opportunity for a design intervention with an entrepreneurship mindset, in a context with a high impact possibility.

This project also aims to be a study case to answer the question:

How to successfully use design and entrepreneurship for young people in rural developing contexts to reduce inequality and poorness?

and the sub-questions:

- How can Design be used for creating strategies for developing impactful rural youth entrepreneurial programs?
- What are the best methodologies for empowering rural youth with entrepreneurship?
- What are the most effective channels for empowering the rural youth with entrepreneurship?

1.1. Problem

The disappearance of the alliance with "Loma Alta", leaves a gap in design skills within the program team. This has also generated misalignment and misunderstanding in the focus, content, and responsibilities within the program organization, blurring the main aim of the program. Therefore, a deviation emerged in the strategies for achieving the expected impact. The impact that is expected to be generated is clear, but the vision of what the camp should be is not. Therefore, the shape, main strategies, and methodologies for achieving that vision are also unclear. This lack of vision results in misalignment, lack of synergy, and miss of long-term perspective (Altıok, P., 2011).

This lack of a clear vision of what the program should become can also affect the sustainability of "Más Por TIC" itself since it is understood by the NGO that the youths are the main entry point to the different rural communities, and the main channels of new technologies adoption into their own communities (Botero S., 2021). This also entails that the program should act as a talent attraction both for rural Colombia and for the NGO itself, getting members from the community that can be part of the organization or acts as bridge builders for enabling the commercialization of services and their effectivity.
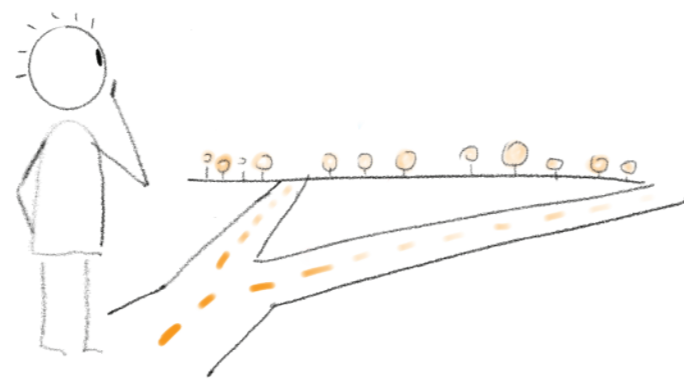
1.2. Challenges from the context

As explained in the introduction, Colombia is a highly unequal country, and the gap between different groups is evident when comparing the countryside with the rural areas (MinTIC., 2020). The quality of jobs and their retribution is notably low when compared to the urban areas (Méndez, M., 2021), which is also affected by the low education quality and the access to this education (Méndez, M., 2021). In addition, there is low access to higher education, which explains the demotivation in rural youth, bringing them to look for a job right after or even before finishing school or trying to migrate to the cities looking for better opportunities in life (Botero S., 2021).

Technology has substantially improved in the last decades, and connectivity to the internet, its adoption, and access to technology have become vital for increasing productivity and being competitive in a global market (CEPAL, N., 2021); however, in Colombia, currently merely the 51% of the whole territory is connected to the internet, and only 9,6% of the rural areas have access to 4G connectivity (Defelipe, S., 2020). In terms of technology adoption, only 61% of the population has adopted smartphones in their daily life and work (GSMA, 2021).

The Colombian state is aware of the importance of connecting the country in order to reduce inequality in access to information, and education, increasing the competitiveness of the countryside. This is why there are several projects to reduce the gap in connectivity and new technologies adoption. It is expected that by the end of 2022, 70% of the country will be connected (Colombian government., 2021), however, it is said that it will only be possible to talk about a connected country by 2025. In addition, it is expected that by 2025 the adoption of smartphones will reach 82% (Colombian government., 2021) where the young people are the main adopters of the new technologies (MinTIC., 2021).

Apart from access, affordability is also a challenge. For this matter there are already recent policies that aim to reduce this gap, lowing the prices of internet plans for the lowest income population, besides, the global smartphone prices started to decrease the prices from 2020, and are expected to keep this trend in the coming years (Yelesemana., 2021). Another important feature of the connectivity in Colombia is the type of mobile subscription that the vast population has, where pre-paid plans are the most common type of plan chosen, due to the fear of contracts (Momentos, R., 2018). Colombian consumers do not want to be attached to anything, since they are not sure if they will be able to pay the bill of that contract, no matter how cheap it can be, "the prepaid user is willing to sacrifice

immediate communication for cost. The prepaid plan consumer measures his expenses in data packages that always keep him connected with his family and friends'' (Momentos, R., 2018).

But access to technology is not enough, adoption is also needed, and this is especially challenging in the rural Colombia, where only the 7.3% of the micro-businesses use the internet, compared to the 23.9% on the national level which is still very low (Planning national department., 2020), Colombia is characterized "by low knowledge, access, and adaptation of both basic and innovative technological tools, and on the other hand, by a reduced innovative capacity" (Planning national department., 2020). It is known the active role that the community has in adopting new technologies and innovations (Méndez, M., 2021; Escandón D. et al, 2019), which is why approaching the youth to get confidence and entering the communities becomes of high importance, considering that this is a middle/long term process, that will not have immediate effects.

To address youth in rural areas whilst keep providing digital alphabetization, education also needs to be analyzed. Like many other areas in the rurality, education also suffers inequality in terms of access and quality (Planning national department., 2020), where there is a lack of education about several necessary technical and digital knowledge (Planning national department., 2020), innovation and creativity (Pinzón, L., 2021), resulting in a low growth mindset in the rural youth.

The question that emerges from these facts is then, what is the best approach to provide the students with a growth mindset whilst equipping them with digital literacy? Aiming for them to become an active part of their community and society, allowing other members of the community to accept digital alphabetization, and grant them more opportunities for their future, reducing the existing gap in terms of education and quality jobs within the rural areas and the cities.

Chapter 1: Understanding and approach to the challenge

1.3. Project process

This project presented an ambitious plan towards developing a strategy proposition, including a future vision, for thereafter, proposing an educational program to promote an entrepreneurial mindset among rural youth, which includes: defining the contents and structure of the program, defining methodologies, and designing the tools and didactic material for this program, to finally iterate on the strategic proposition based on the learnings of the process of developing this program. This process suggests going from the abstract and strategic level, zooming in to the more practical and tangible realm, to finally zoom out again and finalize on the abstract and strategic level.

This process included multiple moments of literature review, interviews, and one workshop for the strategic proposition, the design of a Minimum viable product of one part of the program to test it on the field in real conditions, mixing it with multiple interviews with different stakeholders of the territory, all of which you can visualize on the figure #1: Project Roadmap.

Phase

Strategy

Program

Strategy iteration

Future vision

Program structure

Strategic Roadmap

Methods

Strategic Roadmap

Deliverables

Tactical Roadmap

Didactic material

Tactical Roadmap

Methods

Literature review

Interviews

Co-creation workshop

Clustering and themes

Literature review

Interviews

Field experiment

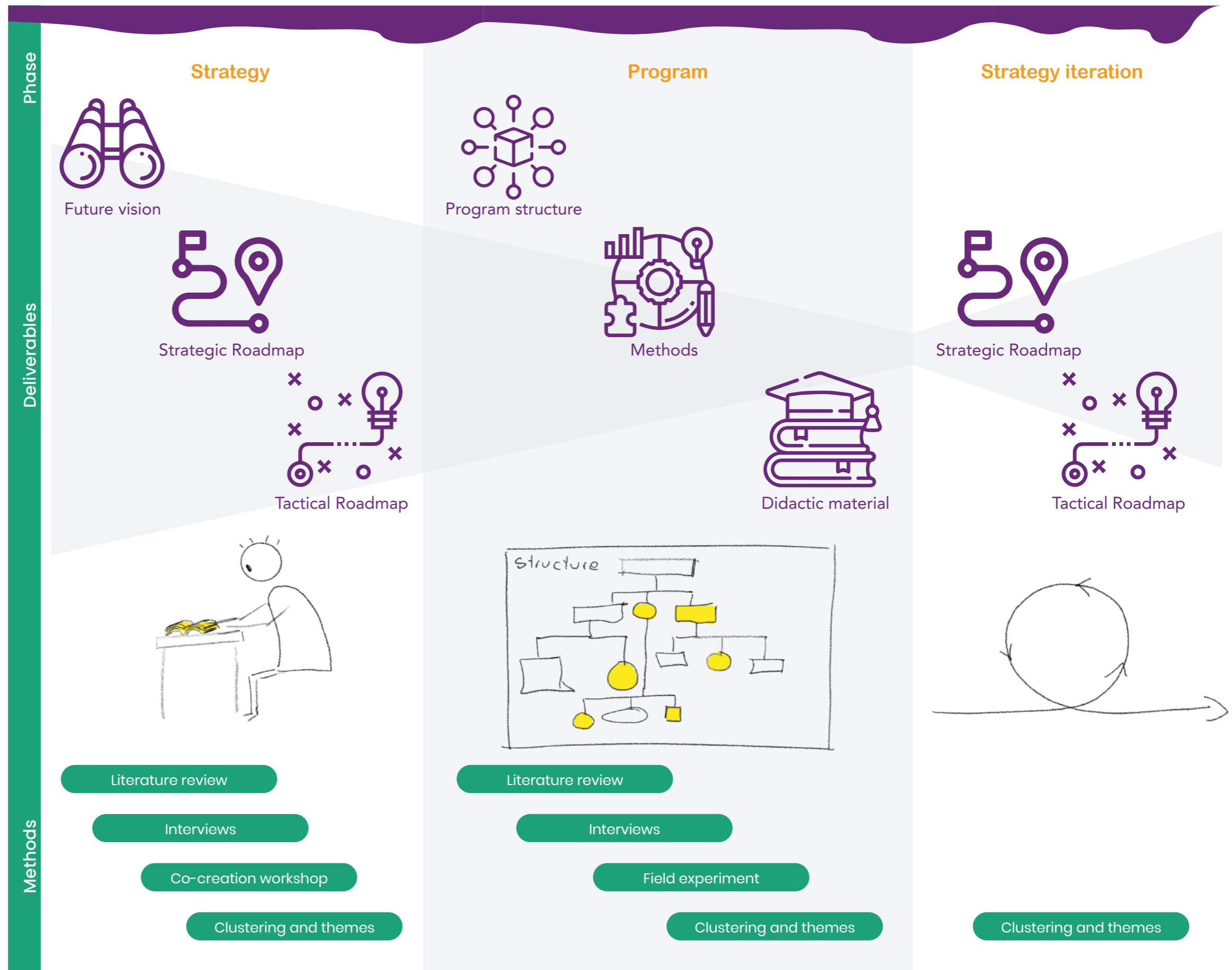Clustering and themes

Clustering and themes

Figure #1: Project Roadmap
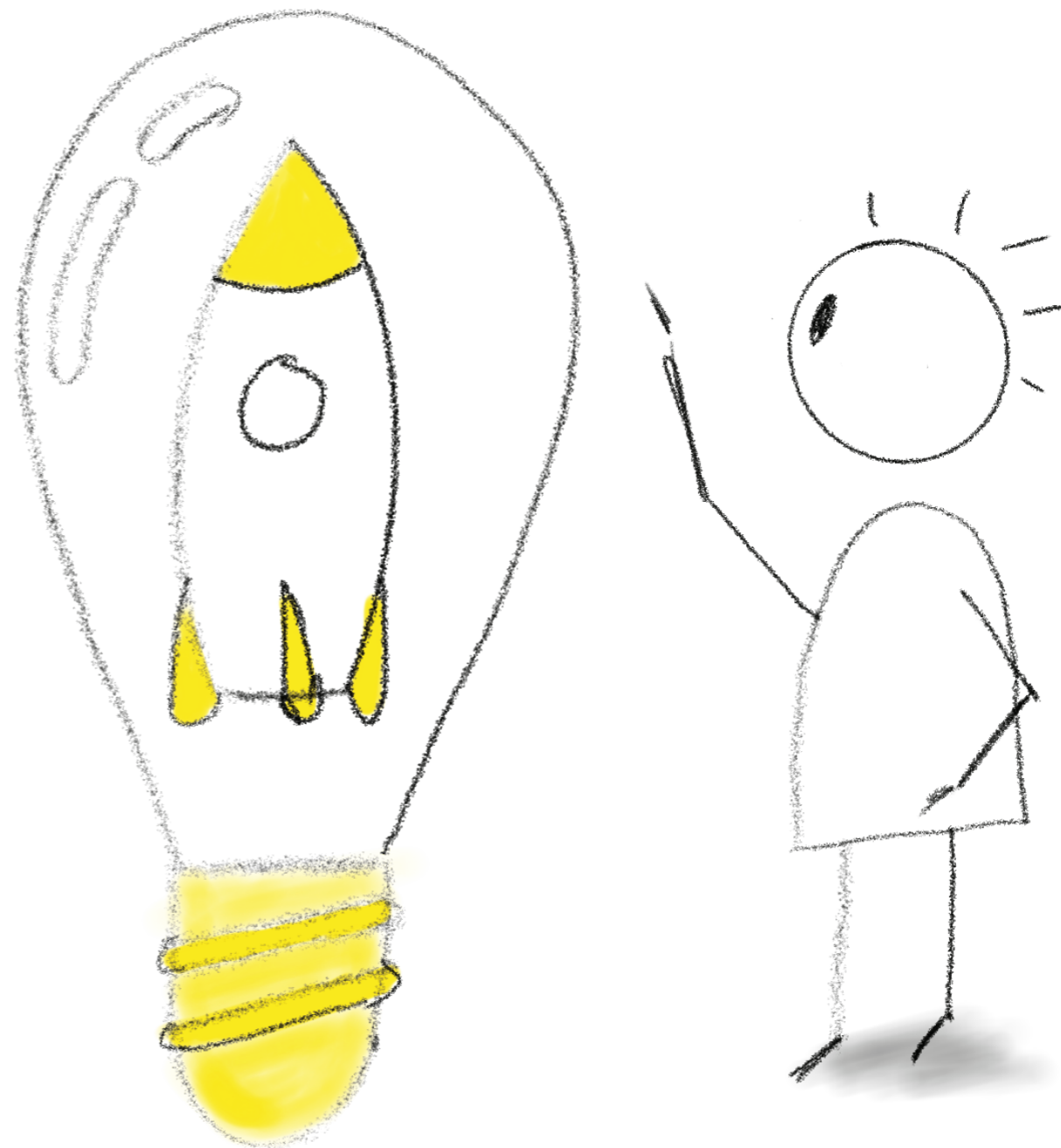
1.4. The approach of the program

Now that we understand the general situation of the context and the impact that the program and "Más Por TIC" aims to have, a general approach for the camp is defined.

The initial approach that this program had in its version 2021 was design thinking and entrepreneurship. From literature, it was found that the best age to start learning about entrepreneurship is childhood and adolescence (Heilbrunn, S. et al, 2014, Brüne, N., & Lutz, E., 2020) since it is when people are more strongly impacted by this. The entrepreneurial mindset is also one of the most effective ways of achieving a growth mindset, whilst providing different options for the future career of a person. According to (Morris, M., & Tucker, R., 2021), elements like "self-confidence, creative problem-solving, resource leveraging, and resiliency become far more central for overcoming the liability of poorness", entailing mainly soft skills. Some of the main advantages of entrepreneurial practical experience are that students can understand that innovation, creativity, and an attitude of realization, are also effective to solve daily challenges regardless of having the actual desire of being an entrepreneur (Camacho, A. et al, 2016). Entrepreneurship can be applied in a much broader way than only to create new businesses, it is also an effective approach to creating an entrepreneurial mindset (Bager, T., 2011) which is according to Morris, M., & Tucker, R., 2021 the "ability to learn from the environmental context, to develop decision frameworks aimed at sensing and processing opportunities that derive from environmental change, and to choose from the various alternatives to successfully address an array of personal, social, and organizational objectives in a shifting world". Connecting to the necessary soft skills to overcome poorness, the entrepreneurial mindset also provides people with these soft skills, revolving "around social relationships, effective communication, planning and organization at work, problem-solving, and decision making" (Planning national department., 2020). In addition to being a suitable approach to generate the expected impact, entrepreneurship teaching is mandatory in Colombian schools since laws 2069 of 2020 and 1014 of 2006. Despite this, only 39% of schools have entrepreneurship as part of their curriculums, and most of them are in urban areas (Rico Alonso, A., & Cárdenas, A. P., 2021). In addition to this, The Colombian parliament is also working on a law project (Guevara , C., 2021) to promote entrepreneurship, combined with the already existing institutions for promoting it like Innpulsa or the different regional chambers of commerce.

But teaching entrepreneurship in rural areas, and specifically in rural Colombia, entails again multiple challenges from the context. In the first place, as it was suggested before, the rural areas in Colombia are mostly characterized as poor areas, and in this context, the need for immediate results can harm a long-term mindset (Morris, M., & Tucker, R., 2021; Pinzón, L., 2021). But luckily, entrepreneurship can also be a great tool to alleviate poorness (Morris, M., & Tucker, R., 2021; Pineda, M. S., et al, 2017). Poorness can also be an obstacle in entrepreneurship education according to experiences from other contexts, where the students experienced changes in the wrong way in their self-perception towards entrepreneurship (Heilbrunn, S. et al, 2014). However, it has been shown that many of the challenges that entrepreneurship education has in a poor context, can be addressed by teacher training, equipping them with the right tools to cope with all the challenges that entrepreneurship entails (Brock, D., 2008). A gender focus is also required, since merely 50% of girls recognize themselves with entrepreneurial skills, compared to 65% of boys (Planning national department., 2020), and other entrepreneurial education experiences have shown a positive effect on boys but a negative effect on girls (Planning national department., 2020). In general, in Colombia, people present a lack of managerial skills, especially the emotional ones (Planning national department., 2020), and in addition, face extra challenges like lack of human and financial capital, weak infrastructure, and perception of constant insecurity (Escandón D. et al, 2019). A Frugal entrepreneurship approach is then suitable for teaching an entrepreneurship mindset in rural Colombia since students could "learn more about how to be innovative and creative with limited resources" (Haara, F. et al, 2016), whilst still solving their customers' problems and at the same time causing a good impact in their community, promoting a balance within profit and inclusivity.

But, despite there are many challenges, previous experiences teaching entrepreneurship already have a lot to say about what needs to be done to deliver the proper skills. "Entrepreneurship should be taught as a method and not as a process; thus, what is taught is a way of thinking and acting" (Daniel, A., 2016). Teaching entrepreneurship is easier when using scenarios and real cases where the students can do hands-on learning (Sirelkhatim, F., & Gangi, Y., 2015; Daniel, A., 2016; Brüne, N., & Lutz, E., 2020). Also, it is more effective when the challenges are not achievement-oriented, leaving apart the competition among students and better promoting collaboration (Brüne, N., & Lutz, E., 2020). Since entrepreneurship is not a linear process, a specific outcome cannot be expected from it, and it should focus on soft skills instead of achievements (Daniel, A., 2016). The role of the teachers and lecturing team is important too, since legitimacy, and connections to the real world, have shown positive effects on entrepreneurship education (Iwu, C. et al 2021; Avila, Y. et al 2021; Ruskovaara, E., & Pihkala, T., 2015).

1.5 . Strategy method and process

In order to follow a rigorous path for proposing the approach, future vision, and road map for the program in relation to the organization, several steps were taken. Initially, an extensive literature review, where more than 60 sources were consulted was executed. Thereafter, the main insights from this literature review were clustered looking for themes and valuable insights, which in this report are expressed throughout the different sections and not just in one single section. In the second place, eleven interviews with the volunteers, employees from the organization, plus ex-participants of the program were performed. These interviews were done digitally and recorded using zoom meetings. Each one of the interviews was later reviewed, looking for the main insights from each one, and contrasted with the notes taken in each one of the interviews. The results of the insights finding were later clustered in themes looking for patterns. As a final source of information, a co-creation workshop, which its route is shown in figure #2: co-creation workshop route (see appendix #1: co-creation workshop) with seven members and volunteers of the organization, combining the theory of change approach (van Es, M., et al, 2015) with the generative research approach by Sanders, E. , 2012. The results and insights of this co-creation workshop were also clustered in themes looking for insights. All this clustered and themed information was again clustered to finally arrive at the initial strategic proposition. You can see the results of the clustering process in figure #3: Results of the clustering process, or see appendix #3: results of the strategy clustering process to see the full process.
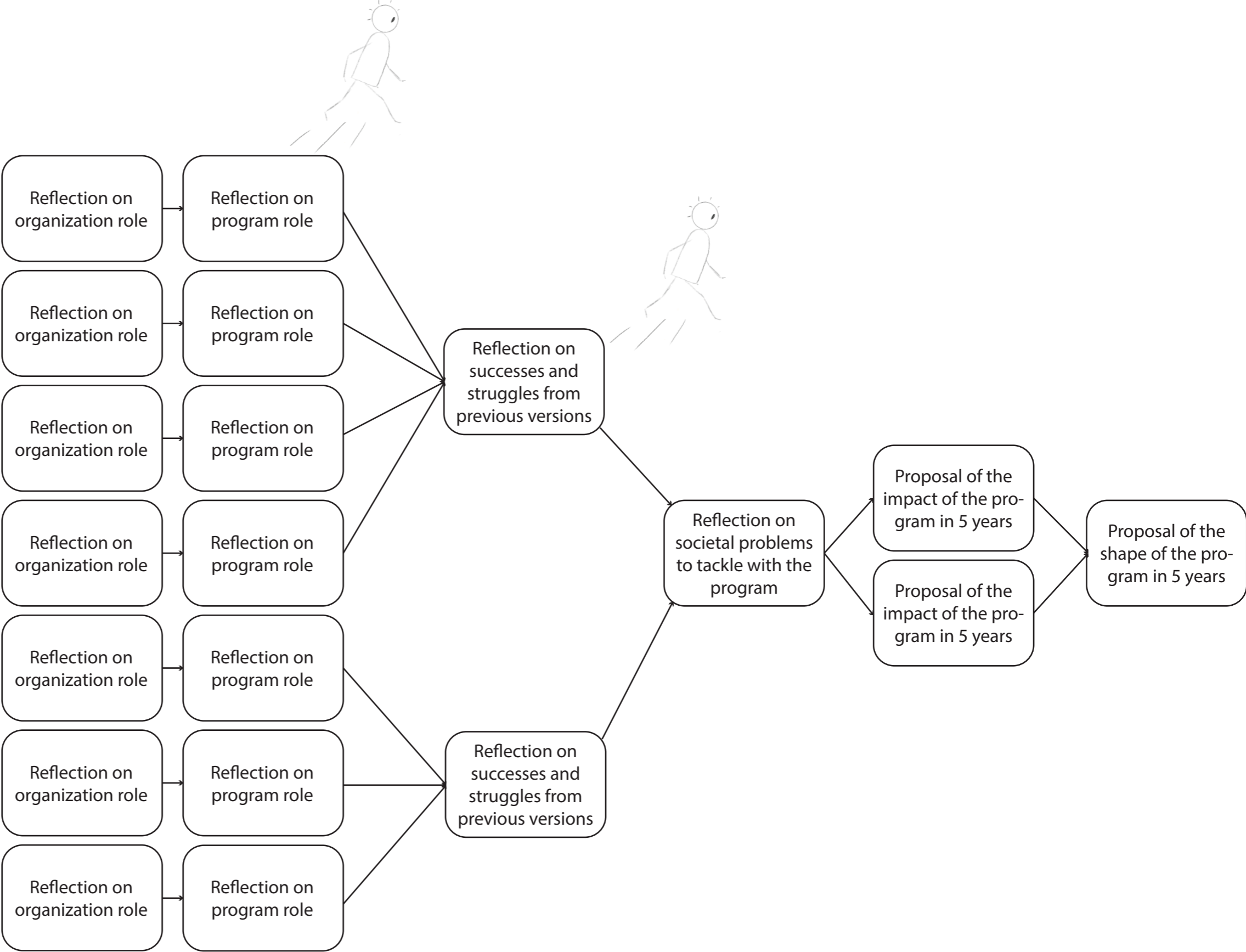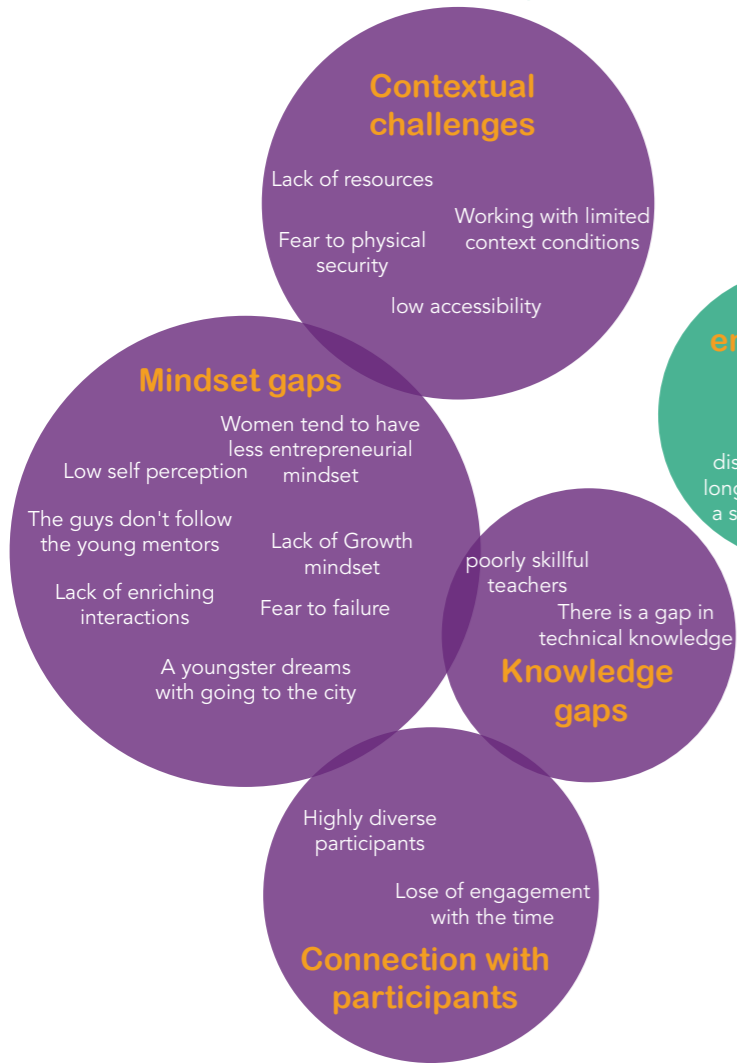

Figure #2: co-creation workshop route

Main challenges

Contextual challenges
- Lack of resources
- Fear to physical security
- Working with limited context conditions
- low accessibility

Mindset gaps
- Women tend to have less entrepreneurial mindset
- Low self perception
- The guys don't follow the young mentors
- Lack of enriching interactions
- Lack of Growth mindset
- Fear to failure
- A youngster dreams with going to the city

Knowledge gaps
- poorly skillful teachers
- There is a gap in technical knowledge

Connection with participants
- Highly diverse participants
- Lose of engagement with the time

Advantages

Public initiatives
- public initiatives for entrepreneurship

Close to production sources
- The country site as a suitable entrepreneurial context, close to production sources

Safe environment to try
- Informality is a disadvantage in the long term, but can be a safe space to start

Diversity of participants
- Highly diverse participants

How to tackle them

Learn by doing
- Student focus
- Brain brake
- Making real money
- Story telling usage
- Showcase moment
- Camp for collaboration, innovation and creativity
- Tangible results
- Scenarios
- Story telling usage
- Experimentation
- Tangible results
- Not lecture focus
- Physical component
- Physical component
- Playfulness
- Real simulations
- Common goal or project
- Connections with real world
- Highly interactive
- Interaction encouraging

Soft skills focus
- Future oriented learning
- Soft skills focus
- Inspiration
- Way of thinking and acting
- Identification / disposition / problem solving / execution: are needed
- Iterative mindset
- Specific contents
- Updated tools and hard skills

Access to technical knowledge

Community based learning
- Community & family involvement is crucial
- Family and community involvement
- Working with community leaders
- Trust environment is key for entrepreneurial education

Regional and personalized approach
- Context knowledge
- Highly competent instructors
- Basic needs need to be ensured
- Personalization
- Empathy
- Regional diversity
- Mentors from previous versions
- Personalization

Network for future opportunities
- Childhood and adolescence are the ideal age to learn entrepreneurship
- Future opportunity Bridger
- Information platform for the country site
- Information network

Effect management
- Information network
- Impact measuring
- Process tracking
- Selection process
- Expansion

The effect

Acknowledge the value of the countryside
- Show the value of the country site
- Make the context visible
- Value showcase

Type of graduates
- Social leaders
- Entrepreneurs

Personal effects on participants
- Switch from entrepreneurship by need to entrepreneurship by opportunity
- Long term thinking
- Life project planning

Inequality reduction
- Decrease gap within country side / city
- Diversity of users
- Access to digital tools
- Access to digital tools

Community knowledge
- Community based knowledge transition
- Network development
- Knowledge transmission
- Knowledge Bridger
- Youth has to be encouraged to transfer technology to the community
- Community cohesion
- Digital integration
- Knowledge network
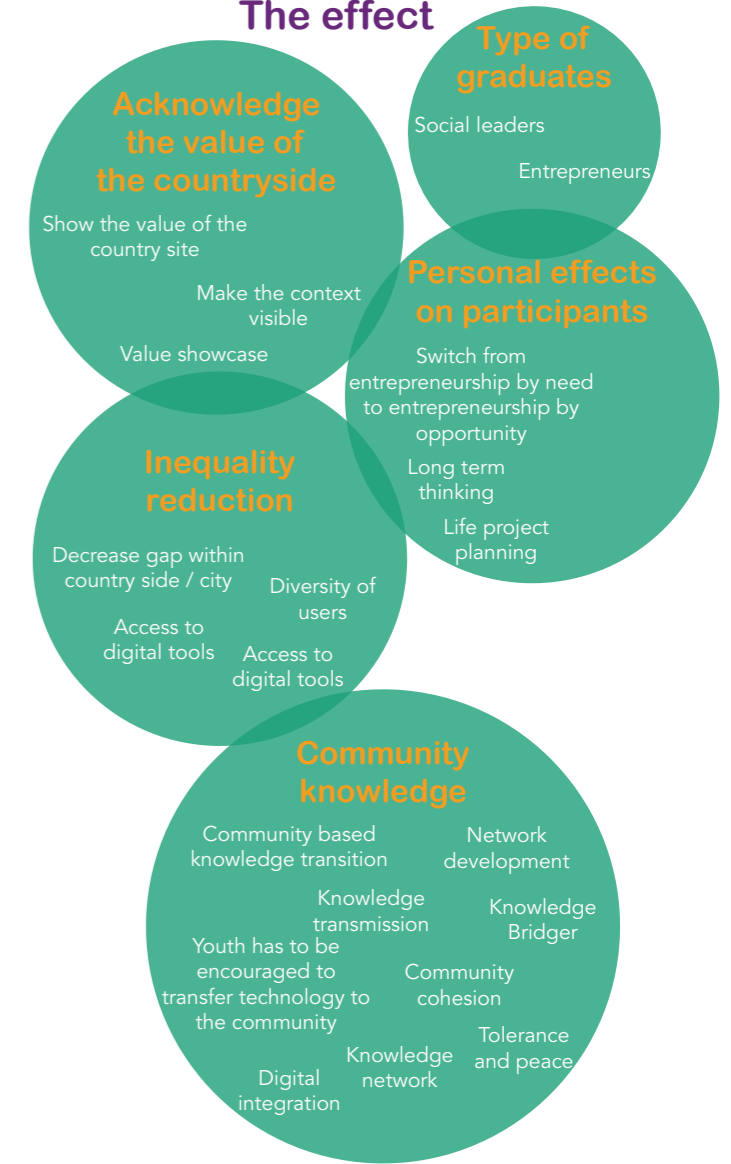- Tolerance and peace

Figure #3: Results of the clustering process

Chapter 2: Prototyping and testing process

2.1. Field experiment

After having a clear approach for the program accepted by the client. A first iteration proposal on the future vision, strategic road map, contents structure, and methodologies & tools for the program was developed for testing in the field: A seven-week project-based entrepreneurship program for rural adolescents between 11 and 15 years old, that takes place in rural schools, which from now on we will call "1,2,3 x TIC". Three out of the eight blocks of the program were detailed and prepared including all the didactic material for the students, their parents, and the facilitators. The experiment was conceived as follows: A two weeks experiment: 3 days on the first week, 2 hours per session, and 2 days on the second week, 2 hours per session. Two different locations were chosen to execute the experiment, performing it at the two locations in parallel. This is for exploring two representative possible contexts of application of the program. The experiment was conceived to learn and iterate both on the strategic proposition and road map, plus the content and program proposal itself. The characteristics of the two locations were:

- A distant small rural school: Bremen- Santa Cruz de la Colina- Matanza- Santander- Colombia:

The first place where the experiment took place was in the agricultural rural school "Nuestra señora de la Paz" on the rural branch "Provincias". This school has a total of 60 students of primary school and middle school (School Nuestra señora de la Paz., n.d.), it is located in the Bremen region in the municipality of Matanza-Santander, which is in the central-east part of the country, in the north of the [cordillera oriental] or eastern mountain range (see figure #4: geographical location Bremen- Matanza- Santander). Bremen can be accessed just by a 4 by 4 truck or a big bus which goes from the nearest big city "Bucaramanga" to the region 4 times a week, by a bad conditions dust path through the mountains which takes around 4 to 5 hours (45 Km). This region has around 1.000 inhabitants (Matanza town hall., 2013), and only counts with this rural school, which offers from pre-scholar grade until 9th grade, having 30 children between the ages of 11 to 16 years old. The courses from 6th to 9th grade are mixed in a single classroom, with only two teachers for all of them all the time. But at the moment of the experiment, due to administrative issues, there was only one teacher for all of them. The students need to go to the main branch of the school in another region, or to another municipality to finish their high school. This region is a completely rural area and its economy is based on the agriculture of coffee, plantain, oranges, and other tropical fruits (Matanza town hall., 2013) plus the local commerce among the farmers. According to interviews with the teacher and some students, some of them need to walk up to 1.5 hours every day to arrive at school. It was also

understood from these interviews that many of the children do not have the support from their parents for their activities, and some of them see education as a waste of time, because they start working when they are 12 years old on the farms, and start getting money. Another important characteristic of this region is that it was previously affected by the Colombian armed conflict for decades, and no less than 10 years ago according to the community, peace came back to the region. This region is a good sample of the situation of many rural areas in Colombia, where it is hard to access and also hard to take the products out for commercialization, which presents difficulties to education access for its population and where the adolescents dream to leave to other places to get better life chances. In this school, the experiment took place during school hours with the support of the teacher.
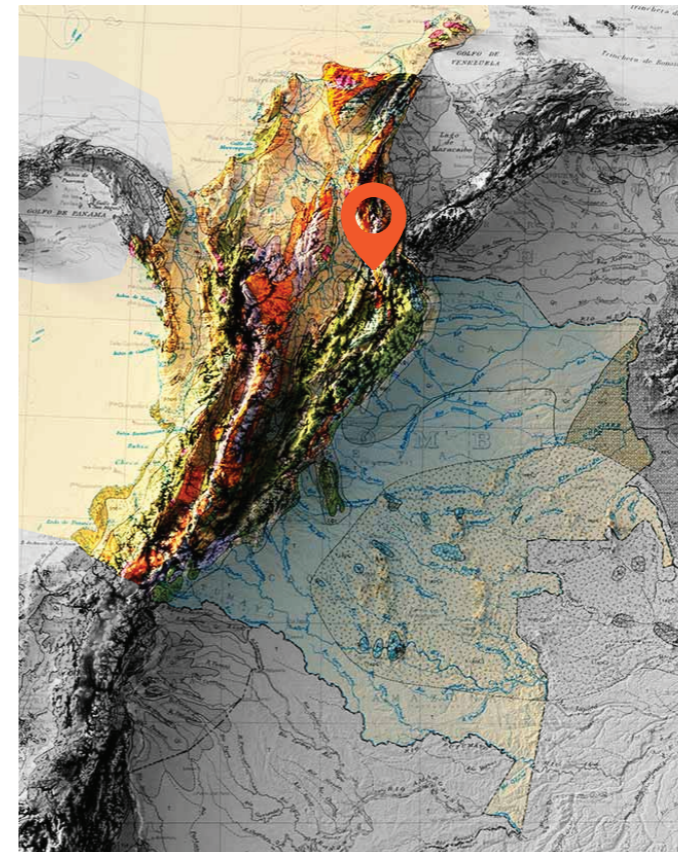
- A rural school: Anolaima- Cundinamarca- Colombia

The second place where the experiment took place, was the rural school "Technical institute Olga Santamaría", located in a central semi-developed region 3 hours away by car from the capital of the country (see Figure #5: geographical Anolaima- Cundinamarca). Anolaima has a total population of 12.211 inhabitants (Municipalities association., n.d.) and its economy depends mainly on commerce and agriculture of several types of products, especially fruits of many types, due to its geographic diversity and climate diversity (Anolaima Townhall., n.d.). The people from this town are highly influenced by the capital due to its proximity. According to the conversations during the sessions with the children, several people come from the capital. In this school, the courses are well divided and structured with one teacher per grade. In this location, the experiment was executed with 14 and 15 years old 9th-grade students, and the test took place outside school hours, becoming an extracurricular activity under the willingness of the students to participate. The test did not have support from any teacher in the institution.

Figure #4: geographical location Bremen- Matanza-Santander. Image taken from Mapas de Colombia [Colombian maps], 2021.
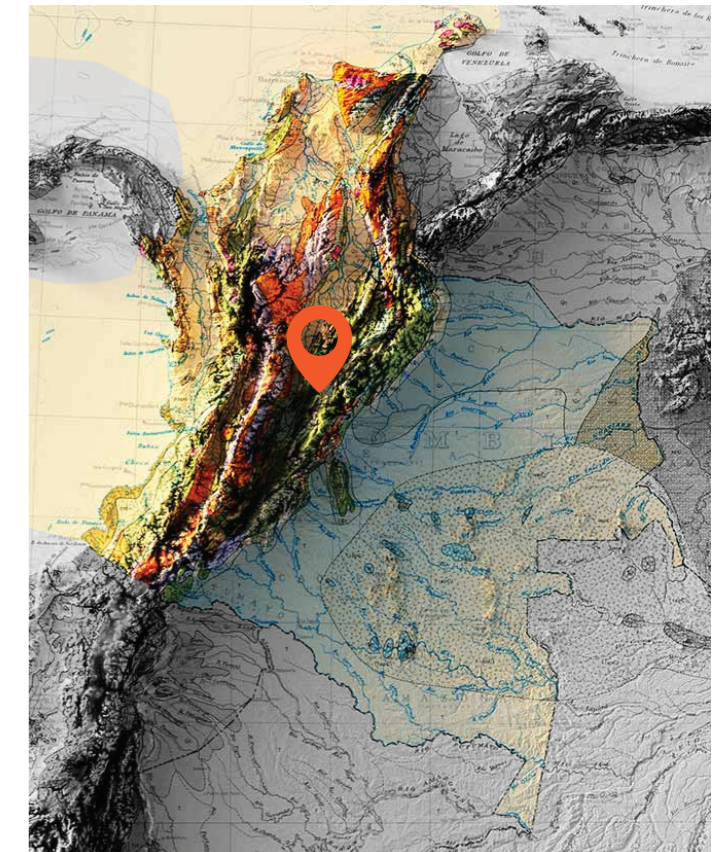

Figure #5: geographical Anolaima- Cundinamarca, image taken from Mapas de Colombia [Colombian maps], 2021.

The experiments were executed by multiple facilitators, per school, where the author of this graduation project was one of the facilitators of the first school, which was considered the most complicated context. The facilitators also had different roles during the experiment:

- The lead facilitator was in charge of guiding the students through the process keeping track of timing, and results.
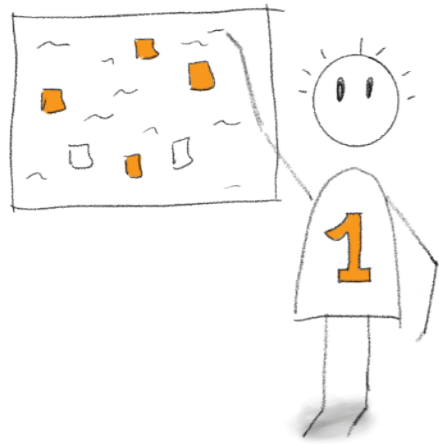
- Observer and support, which was in charge of registering what was happening during the activities, plus supporting with materials or intervening during the sessions in case it was needed. The author of this thesis had the observer and support role, in order to ensure objective perception and a realistic scenario during the experiment.

For this experiment a realistic setup was conceived, that is why all the materials of the modules were developed, including:
- Workbook for the students
- Preparation video capsules for facilitators and students
- Step by step facilitators guide
- Workbook for parents
- Challenge package per module for students

Figure #6: Material for field experiment

The three blocks selected for the experiment were an initial awareness stage, a diverge stage and a converge stage (see Figure #7: Tested modules):

1. Introduction and self-reflection: in this initial sub-module, students reflect on their territory, their desires for the future both for the community and themselves, and for defining territory challenges to tackle.
2. Problem/opportunity finding through customer understanding: In this module, students map the context and understand their potential customers to find a real and potential problem to turn into a business idea.
3. Turning the opportunity into a business idea: Once the problem, the client, and the context are clear, design methodologies are implemented in this module to create an initial concept of the business idea to be developed, ending with a first communication prototype.

For the initial strategic and program proposition, many risky assumptions were presumed, thus, the questions that were expected to be answered with this experiment were:
What profile of rural school is the best profile to start with the program?
Is adolescents the best group for the program?
What is the required profile of the facilitators of the program?
Is it possible to involve the teachers from the first scenario?
To what extent the students are engaged with the activities proposed?
To what extent the parents are also involved in the process?
What can be the main logistic challenges when delivering the program?
Are the type of proposed tools and methods effective when conveying the required knowledge?

Figure #7: Tested modules. Own source

An evaluation matrix for the experiment was developed based on (Bacigalupo, M., et al, 2016) framework, plus the mentioned questions to be answered. You can find this evaluation matrix consult appendix #3: Pilot test evaluation matrix.

2.1.1. Data gathering

During the experiment, multiple strategies for acquiring information were implemented, to ensure the accuracy of the information. The sources of data collection were:
- The material generated by the students was saved in the google drive prepared for the experiment.
- Pictures and videos were taken by the observer.
- The observer took notes of impressions and facts during the session.
- A brief reflection moment was held after every session with the facilitators of each context, all the insights were saved in the shape of notes.
- A session between the two teams was held after each week.
- At the end of the second week, an interview with each one of the student teams was performed, taking notes on each one of them.
- At the end of the second week, an interview with the teacher was performed, taking notes of the different insights of the conversation.

2.2. Results of the experiment

A total of 36 students between the ages of 11 to 16 years old participated in the experiment, out of which, 30 belonged to the rural school located in Matanza-Santander and 6 belonged to the school located in Anolaima- Cundinamarca.

2.2.1. Rural school in Matanza-Santander

Two facilitators were present in this location: The leader facilitator is a volunteer from "Más Por TIC", she is an engineer in product development and holds a master's in innovation and knowledge management, with several years of experience in manufacturing, communication, marketing, and entrepreneurship. The role of the observer was performed by me as researcher and project leader. In addition, we had the help of the teacher of the school for managing the group, sending them the material, receiving insights about who the children are and their environments, and help for immersing into the community and knowing how everything worked in the region, including the possibility to visit some natural attractions in the surroundings.

28 Students out of the 30 total students finished the three proposed modules. And from these 28 students, the sessions got a 90% of attendance in total. Twelve

kids belonged to 6th grade, six kids belonged to 7th grade, six belonged to 8th grade and four belonged to 9th grade. The two kids that did not finish the modules belong to the 6th grade (see figure #8: Group Bremen).

During the experiment, only 20% of the students expressed they watched the preparation videos before class. Some of them expressed not having access to the internet, some of them expressed they did not have time to watch them, some of them expressed there were too many links, and some of them expressed they did not want to watch them.

Regarding the homework, only around 20% of the students were continuously doing their homework. The other students expressed not having the time or being lazy, having a lack of eagerness to work outside school hours.

During the workshops, 9 groups were formed, one of these groups was dissolved since they were not working well together, and expressed eagerness to change the group. All the other groups worked together successfully with some variations in quality, commitment, and enthusiasm.

In the first week, three sessions took place: Monday, Wednesday, and Friday. The session on Friday was considered the hardest one to facilitate, we believe this was because of the tiredness of the children on the last day of the week, but also because they did not do one homework that was essential for being able to successfully develop the proposed activity of that day. In the first session, the lead facilitator was the only one in charge of managing the group, however, we realized that it was necessary that the observer facilitator also helped to manage the group, due to the size of the class.

During the first two sessions, the instructions were given step by step; but then changed towards giving the general instructions and goals of the session, and guiding the groups in a more personalized way, to allow better development of the activities, and to avoid excessive loss of focus and attention.
Some children were identified as problematic, but they performed well during the activities, showing great creativity and ability to follow a creative process with fantastic results despite creating disorder in the classroom in certain moments. One of these children expressed in the interview after the pilot "Now I believe that everything is possible" and "I would not change anything from the program, it was great".

After the first session, we were allowed to be part of the sports class, where we were able to play football (soccer) with them, which allowed us to connect better with the children, so they did not see us anymore as complete strangers. This activity allowed us to bond with some children who were leaders of the group in multiple ways, both towards working and generating ideas, but also for

creating disorder in the class.

The children, especially the girls, expressed great interest in the ability of the facilitators to speak multiple languages, even sometimes expressing their eagerness to learn some English words from us, showing how some inspiration from the facilitators can also be part of the impact in the community.

The teacher expressed that the fact that we were external people from the school was an important factor in the success of the sessions since it brought newness and curiosity among the children. She also expressed she saw the students more focused and participative than usual, despite the fact that we perceived it was hard to make them give ideas in the beginning. In addition, she also expressed she realized the children were capable of doing things she did not think they could, showing some mindset change in the teacher. After the last session, interviews with all the children and the teacher took place, where they expressed multiple opinions on how to improve the program, its weaknesses, and main strengths, the way they felt during the program, and they even asked the facilitators to not leave so soon.

The proposed reflection tools were not used by the students. Only three of them recorded the reflection video proposed for the end of the first week, and only four of them assembled the self-reflection box. A physical board was also located inside the classroom for the students to give feedback in an anonymous way, but this board was not used by anyone. Instead, the talks with the students and the teacher, plus the final interview/feedback moment showed to be more effective for reflecting and getting feedback from the students, as it became a mandatory activity promoted by the teacher.

Access to the Internet and electronic devices during the experiment was the biggest challenge. Some of the students have their own cellphone, but usually, this device has a really low processing capacity. Most of the students had access to a cellphone at home, but it is a device used by all the family for multiple purposes and moments. In both cases, the access to the Internet was limited, since they make use of prepaid plans, therefore, it was necessary to share wifi with them, so they could execute the proposed activities. For most of the activities that used a device and Internet, it was necessary the facilitators lend and help the groups with their own mobile devices and Internet.

Figure #8: Group Bremen, Own source

2.2.2. Rural technical school in Anolaima- Cundinamarca

Four facilitators were present in this location: the observer facilitator was the founder of the NGO, with a bachelor's in industrial engineering and a Master's in public policy. The other three facilitators acted in different moments as the leader facilitators. The first one is a graphic designer, with experience in the digital industry, who also belongs to the community where the experiment took place. The second one is an economist, who specialized in corporate responsibility and has a Masters's in administration, with an emphasis on innovation. The last one is a social communicator, with experience in group facilitation within social projects. In this case, there was no teacher accompanying the sessions and the process, due to time availability (see figure #9: Group Anolaima).

Six out of the six initial students finished all the modules and sessions, with 90% of attendance through the sessions. Only one student was not able to attend the last session because the road she used for going to school suffered damage due to a storm. This situation was solved by the other team member establishing communication with her through the session vía Whatsapp. All of them belonged to the 9th grade. Initially, it was expected to have 15 students participating, but misalignment and lack of communication with the institution did not allow to promote the program as it was expected.

Same as in the other school, the students did not watch the preparation videos, but in this case, only because of lack of time, since at the moment of the experiment, some events were happening at the school, which did not allow the students to focus better on the homework activities. Instead, they watched the videos at the beginning of each session which allowed them to convey the necessary theory for the whole program.

In this context, all the students did their homework, despite having a reduced amount of time between sessions, doing even more of what was asked of them, involving not just clients but also some actors from the school, like teachers and other fellow students.

The digital activities in this context were easily executed since most of the students already knew the existence of the proposed tools. This resulted in that extra tools needed to be explored during the sessions by improvisation, making use of the technological tools of the classroom, which were unknown by the experiment designer before the experiment execution.

During the sessions, three groups were formed, each one of two students. No group showed any issue working together, allowing the three groups to finish the experiment as they originally started.

In the first week, the sessions took place on Wednesday, Thursday, and Friday, and in the second week, they took place on Wednesday and Thursday. Friday's session was perceived as the hardest session, due mainly to the tiredness of the students.

All children were highly motivated and energetic, and there was especially one student who showed special energy and critical thinking through all the sessions, which showed the advantage of taking the program willingly instead of it being part of the school program. One of the groups was never capable of achieving the expected results and in some moments frustration was expressed by them.

The observer facilitator intervened several times during the sessions since she was the one who knew the program better and could make some decisions during the program about unclear instructions or unknown answers from the audience.

Some of the children challenged the legitimacy of the NGO and facilitators, showing high importance on the profile of the facilitators both to be legitimate with the students but also to be able to inspire them.

In all of the sessions, there were groups that finished first than others, and that resulted in boring moments for some of them waiting for the other groups to finish. To fill those empty moments, the facilitators brought external materials from the initially proposed for inspiration and activation of the students.

Two of the three facilitators showed to not have the right profile to facilitate the program, since they were capable of managing a group, but were not capable of being mentors of the children and addressing the right questions at the right moments. These facilitators lacked entrepreneurship experience.

All the facilitators were not capable to be present at all the sessions, due to illness and work emergencies, since both of them belong to the NGO as volunteers instead of full-time workers.

All the resulting business ideas were social activation ideas instead of profitable business models. This was originated since the initial territory mapping session, showing that lots of them did not know their territory due to newness in the context, lack of interest in the territory, or because of constantly being in the same small area without being eager to explore the characteristics and places of their community.
At the moment of the final activity, where the students recorded a play to explain their business idea, two school coordinators were present, this engaged the students and the school in what the program was offering.

The parents of all the children were involved in the process, expressing gratitude towards the program after

it finished. Some of the students asked the facilitators if they could continue participating in the program once the program is officially launched in its full version. One of the students expressed high eagerness to continue executing the idea that emerged through the experiment, showing a willingness to do crowdfunding to start his idea. This student was the most involved one throughout the experiment and is also an active member of the school.

Figure #9: Group Anolaima, Own source

The different information sources were used to extract specific insights that were later clustered in two rounds based on themes, towards identifying the main learnings from the executed experiment. You can see the summary of this process by consulting the appendix #4: Pilot analysis clustering process
In addition, the experiment was assessed by taking into account an impact matrix, which was developed based on the entrepreneurial mindset framework proposed by (Bacigalupo, M., et al, 2016), which can be consulted in the appendix #3: Pilot test evaluation matrix.
All this information analysis was taken into account to iterate both the strategic proposition and the actual shape and content of the program in its first scenario.

3.1. Analysis of the results

The experiment was valuable for testing the program and all the assumptions that were presumed for the initial iteration of the proposal, besides, it allowed us to get immersed in their context, their way of life, struggles, and stories, becoming almost an ethnographic experience for the development of the proposition. In this section, it will be described the main learnings and conclusions from this experience. These conclusions are based on the clustering analysis process previously mentioned.

3.1.1. Background stories

It was identified that many of the children have dysfunctional families, expressed in lack of support from their parents, lack of economic resources or even being orphans or educated by their grandparents. Others also have difficult violent situations at home which results in them seeing going to school as a way to escape their home context. Some of the children that go through these familiar issues tend to be problematic at school, generating a lot of disorder and presenting bad study results. However, these children also show sporadically some of the most creative minds to resolve issues and tackle challenges when they are guided and facilitated by using creative and gamified activities. According to the teacher, this tends to be a common issue in rural areas.

A big difference based on gender was also found. In contradiction to what was found in the literature (Brüne, N., & Lutz, E., 2020), girls tend to be much more applied to studies than boys, but when digging deeper, this has many explanations. Boys tend to start working on farms when they are 12 or 13 years old, working both on their

family farm, but also working by days on other farms when they are not studying. Because of this, boys do not have time to study or do homework outside school hours. This also causes boys to get to know money since they are really young, and sometimes, they prefer going to work to earn money than going to school. On the other hand, girls are more encouraged to help with home duties, like cooking, or cleaning. But also they are encouraged by their parents to focus more on their studies, which gives them more support and time for school activities and homework.

3.1.2. Barriers

These background stories create many barriers, the first is the difficulty to engage students in activities. Many of them are not motivated by studying, since they see it as a waste of time, and have knowledge gaps for expression, especially in writing skills. In other cases, they barely see studies as a duty for the family to receive subsidies from the government. The fact of being vulnerable and rural groups allows some families to receive government subsidies, this causes some students to not want to do more because they fear losing the subsidies they are receiving, generating a barrier to having a growth mindset, as it was already found in the literature (Planning national department., 2020).
Environmental factors, especially weather and its consequences also become a big barrier to attending school. The strong storms cause avalanches, deteriorating the roads and making it too dangerous for some children to attend school. This decreases the level of attendance and disconnects some children from the processes, or makes them lose part of it.

3.1.3. Positive impact

A positive impact despite it being only an experiment was identified already in the communities. On the first hand, initial signs of an entrepreneurial mindset were already identified; most of them indicated in the last session that they now believe they were capable to create business ideas, working as a team, or following a creative process for finding valuable proposals. The teacher also expressed her surprise to see what the students were capable of and highlighted the value of using creative and playful methods for learning.

Most children expressed they liked the program and the things they learned, and students, coordinators, and teachers thanked the facilitators for executing the experiment. The teacher expressed she wanted us to go back to deliver the full version of the program, and she

Chapter 3: Experiment Data analysis
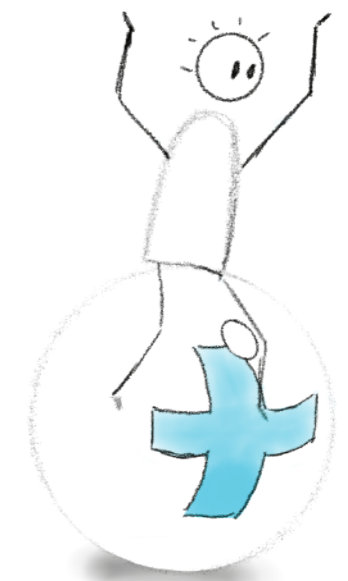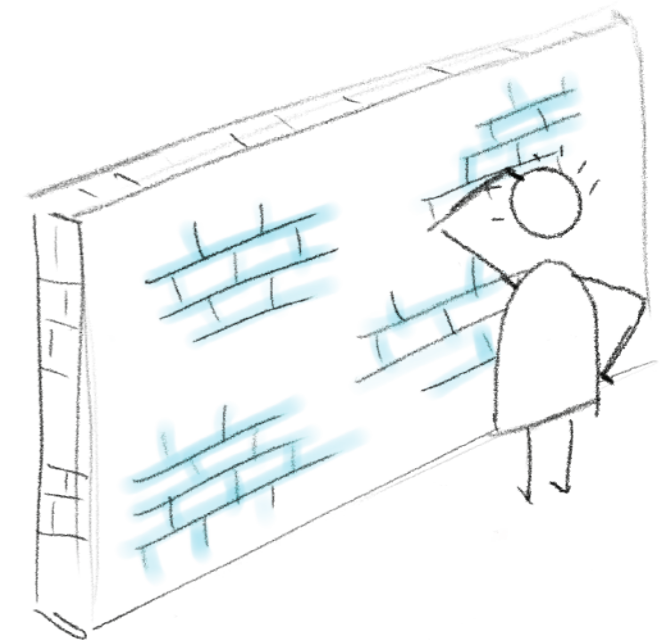
compromised to spread the voice and help the NGO to extend the program to other rural branches of the school. Most of the kids expressed we were with them for too little time and that they did not want us to leave. Some of them also asked if they could be part of the full version of the program in the close future.

A specially interesting impact was identified on the teacher. She mentioned she started to reevaluate the way she teaches, mentioning the need to update her methods to increase how the students make use of their potential. She also expressed great interest in learning how to keep growing the entrepreneurship seed we planted through the experiment and getting materials for her future classes and projects with the students.

3.1.4. Preparations

Logistics and the work prior to the execution of the program also left significant learnings. On the first hand, it is important to understand the institution before the execution of the program, its infrastructure, the characteristics of the children, and access to the Internet and digital tools. Trust must be cultivated with the community, teachers, and especially the parents before the start of the program and the arrival of possible external facilitators, establishing different channels of communication with the community and informing who are the external comers, what is going to happen in the program and the role of the facilitators and external comers both in the program and the community.

If external facilitators will visit the school, health also must be checked prior the starting the program, taking care of possible adverse conditions of the different contexts, to avoid health problems both for the facilitators and the students who participate in the program.

3.1.5. Dynamics

Working with many groups at the same time with creative activities showed to be a challenge. Some groups finished first than others, which originated those groups to create disorder in the classroom using the didactic materials that they were given for completing the activities or simply to get bored until the next activity started.
There are many leaders hidden in the classroom, it is important to identify them, and guide them in the right direction, avoiding that the unmotivated students contaminate their attitude to other members of the team.
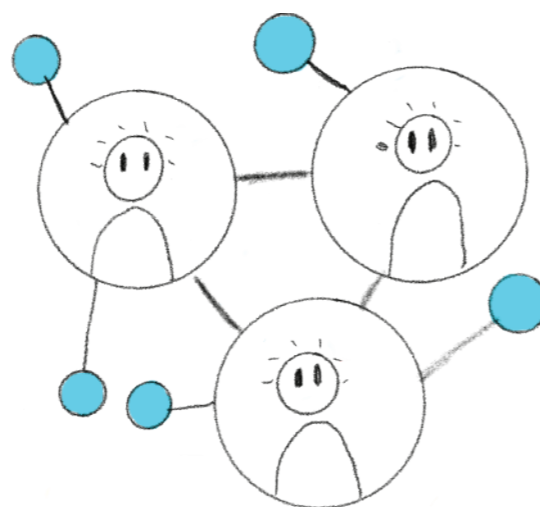
Another important discovery is to understand and accept that no matter how good the program and the facilitators are, there are some students and groups that will not be able to develop the activities in an expected way and therefore they will not achieve the results that the program proposes for students.

3.1.6. Technology

Contradictions in terms of technology were found in the field. All children have access to at least one familiar cellphone, however, the access to it is limited and depends on the willingness of the parents to let them use it. As was identified in the literature (Momentos, R., 2018), most of them make use of pre-paid plans, which entails they don't always have access to the internet. On the other hand, some of them have their own cellphone, but it usually has little processing capability which limits the tools that can be used with them. The knowledge of the children is mostly limited to the usage of WhatsApp, social media, and some smartphone games. All of them make use of video content on social media like Instagram and TikTok, but when implementing video-making challenges, they show certain rejection towards the activity, and they are not willing to upload those on their social media, since they considered it as their personal brand. It was however interesting that they kept connected with each other through different technology tools, especially WhatsApp and TikTok.

The differences in technology knowledge between the two schools were substantial. In the first one, the knowledge was limited and every tool needed a big effort to be taught, whilst in the second context, the tools were not enough, and the facilitators had to improvise in order to provide the students with new tools. This shows the importance of the program to be flexible according to the conditions and previous knowledge of the students.

3.1.7. After the program

Many questions from teachers, students, and even facilitators emerged from what is going to be the role of "Más Por TIC" after the program and how to create a network of people, knowledge, and ideas, Offer extra knowledge, or follow courses and programs for the program participants. This entails that "1,2,3 x TIC" is only the initial step for creating a bigger network or "platform" of people, ideas, and knowledge. Indicating how "Más Por TIC" can become a knowledge hub creator, connecting the students among them, with new knowledge and opportunities for personal and professional development from a territory perspective.
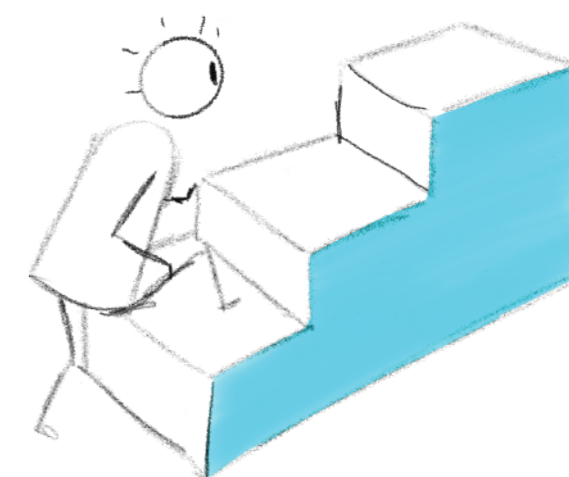
3.1.8. Facilitator profile

Not anyone can be a facilitator of the program, and that was shown by the weaknesses and strengths that the different facilitators showed in different moments of the field experiment. Despite the most successful facilitators have a highly educated profile, they were all different in their education, however, there were two main characteristics in common: entrepreneurship experience and knowledge and experience in group facilitation. It was also identified that children's management experience is also desirable but not imperative. In terms of soft skills, being able to empathize, listen, energize and inspire are important to connect with children and work with them not just as facilitators but also as mentors.

On the other hand, the fact of having external volunteers as facilitators showed to be highly desirable but problematic, since the program entails being on the field for more than one month, which generates problems for personal working, comfortability, health, and motivation. Hence it becomes desirable to make use of context talent and leadership, bringing local leaders with the desired profile to guide the program.

Keeping the newness and excitement of having external facilitators or experts was a significant insight since it generates curiosity, inspiration, and motivation for the students. Therefore it is desirable to have eventual external facilitators or teachers to keep the engagement of the children.

3.1.9. Facilitators training

Training the facilitators emerged as a vital stage for the success of the program. Pre-recorded and printed materials are not enough, and it becomes important they receive experiential training, going through each one of the steps of the program, to understand the dynamics, questions, main challenges, key moments, and do's and don'ts of the program.
Facilitators should not be mere facilitators, they should also be mentors and role models for the children, hence a preparation stage to recognize themselves and how to inspire the students through their own stories and experiences is necessary for the facilitators' training process.
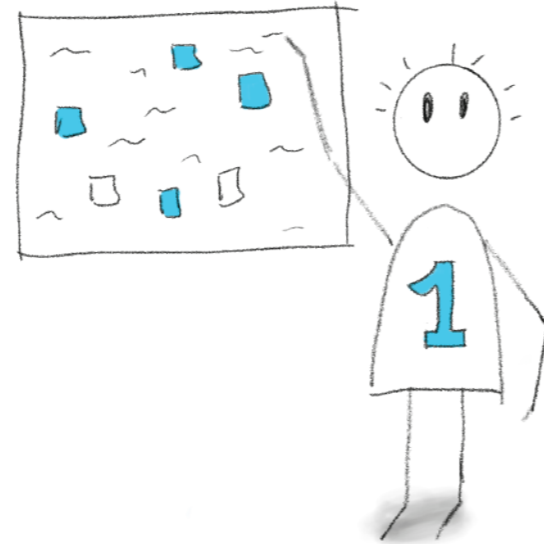
3.1.10. Facilitation tips

As a part of the facilitators' training, being part of do's and don'ts, key aspects for managing adolescent groups are to be included. There are three groups among these tips: The first one is concrete communication, being clear with the statements, being firm when giving instructions and making them be quiet, plus giving constant feedback from a personal, group, and class perspective, zooming in and zooming out, to keep the attention and engagement of the students.

The second group is the engagement strategies. Getting involved in community activities appeared to be highly valuable to be received and welcomed by the community in general and the students, hence identifying and participating in such activities is an important task of the facilitator on the side of the facilitation itself.

The last group is tools management. In addition to the activities material, the facilitators count on ice breakers and extra material to make use of them whenever it is needed. Using them at the right moments, and selecting the right tool and material to use is an important skill that facilitators need to develop prior to and during the program, making wise use of the time and resources that the program provides.
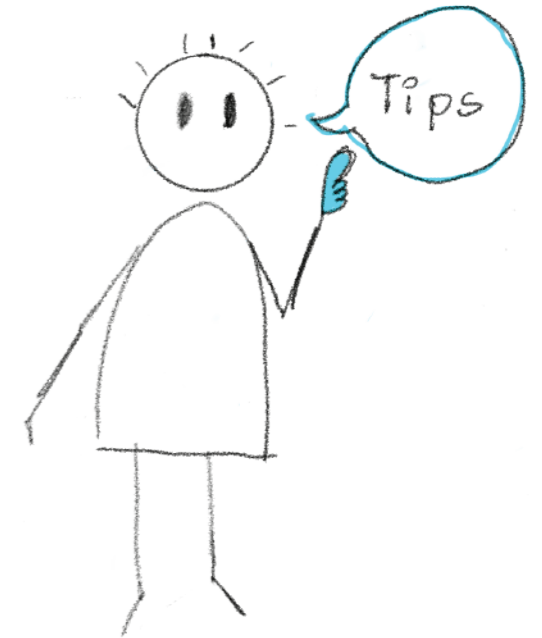
3.1.11. Methodology

The methodology was the field where more significant insights and learnings were gathered. In terms of group management, a group size of 15 to 18 students per class was identified as the optimal size to facilitate, since it allowed continuous, personalized, and ordered mentoring and feedback distributed by two facilitators. The groups must be divided into age groups, having maximum two consecutive course levels at a time, to decrease the knowledge and mindset gap generated by age and experience. The problematic children also need to be identified and separated from the beginning and keep them located apart in the classroom to avoid excessive disorder during the sessions.

Parents' participation showed to highly influence the process, engagement, and results of the students, not only by helping them but mainly by supporting and encouraging the children to do the proposed activities.

Due to the barriers previously mentioned, Some students don't have time to do academic activities outside the school hours, hence, the most important activities have to be executed during the session. The expected results cannot depend on the homework activities, or be directly influenced by them.

The territory problem-finding approach for identifying the challenges that the students would use for the rest of the program, was identified erroneous since it made it more complicated and difficult to find sustainable and profitable business ideas. Instead, territory potentials mixed with territory needs can be taken as a more promising approach for the challenge-finding stage of the program.

The theory delivery was problematic since it depended exclusively on watching the videos before the sessions. As it was already mentioned, a low percentage of the students watched these videos due to many reasons. Therefore, reducing the number of videos and doing a collective summary of the knowledge provided by one unique video per session, emerged as a solution for this problem. In addition to this, an initial introductory session emerged as a possible solution for making students understand better the value of the program at an earlier moment.

Creating a clear grating system that the teacher can use for multiple subjects emerged as a necessary feature to include in the program. The teacher, but also the students expressed this need since it can motivate them, and encourage them to do all the activities, in contradiction to what was previously considered. This is because of the model used in rural education, where grading and writing are the dominant methodologies for teaching.

In terms of timing, it was identified the importance of giving personalized and constant feedback to each one of the groups. This requires more time available per group, and constant results sharing among with the whole class. This might be solved by the size of the class and the facilitation methodology used by the facilitators, becoming as it was already mentioned, not only facilitators but mentors.

In terms of the digital tools for learning, having access to the internet and to cellphones showed to be highly important. Hence portable wifi must be included in the facilitator's package, and mobile devices need to be provided to the children for the execution of the digital activities.

Using a rewarding system was successful in terms of perception, teamwork, and community thinking, where the mobile data packages were the most desirable award. Sports also appear to be effective for children, despite they were not included in the proposed rewarding system, the teacher did use them to motivate the students to finish in a proper way some of the activities.

The didactic material given to the children was effective. But the excess of it caused disorder and waste since the students started to play with it during the sessions. Therefore, dosing the material instead of giving it to the students all at once becomes a necessary strategy to
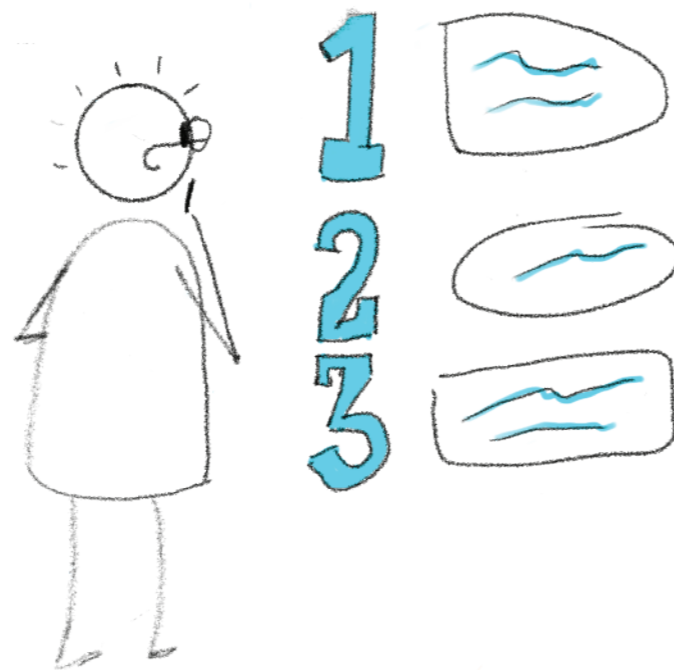
reduce material consumption, and also to keep the order in the class.

Finally, clarifying activities to do at the beginning of the session, and clarifying the homework at the end of the session, was an emerging strategy that showed effectiveness for managing, facilitating, and achieving the expected results from each one of the sessions.

3.1.12. Materials

The language used in the materials needs to be simplified since some of the facilitators expressed that some jargon was not clear to them. This issue is also addressed in the facilitator's training.

Extra material for motivated students to consult, and for the usage of the facilitators in certain moments was used and asked by the facilitators of the experiment. This does not imply creating extra original material, but videos, TED talks, books, blogs, and more.

The ideation sessions lacked tools for organizing and evaluating ideas. In replacement, facilitators and students created their own matrixes, but they were confusing and required time to elaborate, which limited the emergence and selection of ideas. That level of freedom was a mistake and can be easily solved by implementing simple matrixes or printed paper sheets.

The method for sending digital material was also a mistake. In the experiment, the students received links by WhatsApp instead of files, this was a problem because the data packages they use usually have free WhatsApp, but not free internet navigation. Instead, the mandatory material should be sent as WhatsApp files, so the students can see them with the limited resources they possess.
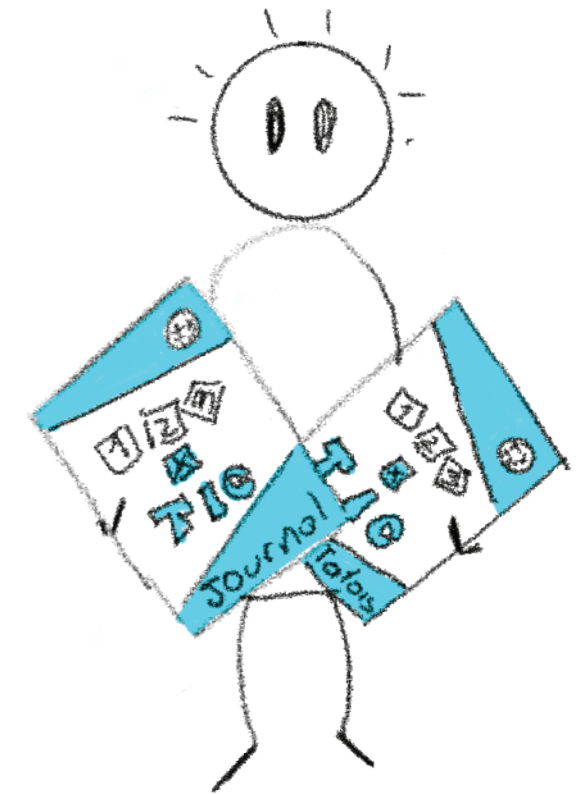
3.2. Archetypes of the rural students

To have a good understanding of both the strategic proposition and the specificities of the program, several archetypes of the possible students will be described in this section in the shape of student personas. These profiles are based on the interactions, observations, and interviews from the field experiment. Not all of the student personas will be present in all the scenarios of the strategic proposition, thereafter, this will be clarified in the road mapping section.

The orphan dreamer

He is a child with a complicated story, he does not live anymore with his parents, and his grandparents take care of him. This lack of support at home has shaped him into a disorder generator and a rebel inside the classroom. However, he is incredibly smart, feels extremely motivated by sports and learning through playing, and enjoys being with his "mates" during and after class. He is a natural leader, both for craziness and hard work, but needs continuous companionship and facilitation to make all of his potential shine.

Time to school:
30 minutes walking, 10 minutes by motorbike
Access to smartphone:
Yes, but only at home
Access to the Internet:
Occasionally through prepaid plan
Dream:
Becoming a soccer player or a sea biologist

The smart seeker

She lives in a rural area, 5 hours away from the closest regional capital. She is the most judicious student in the class, she is super motivated to execute all the educational activities both at school and at home. She has 2 other extraordinary sisters that encourage each other to perform great at school. She has plenty of support from her parents for her school activities, especially from her mom, who provides her with all the help and resources she can offer. She is also sociable, but selects her friends with care, mixing almost exclusively with other judicious students.

Time to school:
20 minutes walking (with her sisters)
Access to smartphone:
Yes, but only at home
Access to the Internet:
Occasionally through prepaid plan
Dream:
Becoming a lawyer

The questioner

She lives in a rural area, 30 minutes from the closest urban center and 3,5 hours away from the capital. She is influenced by the city culture and has access to information and culture from a diversity of sources thanks to her curiosity on the internet. She is highly motivated by entrepreneurship since in her family there are entrepreneurs that have shown her how entrepreneurship can improve their quality of life and the community around it. She questions everything, from her teacher's profile to some social situations around her, giving her a strong personality towards goal achievement and problem finding. Thanks to her family, she has access to a computer at home, and despite it having a low processing capacity, it allows her to have access to great information sources for her studies and personal interest, making her aware of many available digital tools.

Time to school:
15 minutes walking
Access to smartphone:
Yes, she has her own cellphone
Access to the Internet:
Occasionally through prepaid plan and at home by wifi
Dream:
Having her own company

The cared player

He lives in a rural area, 5 hours away from the closest regional capital. He is the "cool guy" from the class. He likes to be perceived as the bad boy, but still, he performs great at school, mainly thanks to the support of his mom, who pushes and encourages him to do all the activities from school, because she believes education is the best path toward success. He loves sports, especially soccer, and takes sports as a reward for his hard work. He likes generating disorder in the classroom, but when he is guided performs great, and is capable to create good ideas and projects.

Time to school:
60 minutes walking or 15 minutes by motorbike
Access to smartphone:
Yes, he has his own cellphone
Access to the Internet:
Occasionally through prepaid plan
Dream:
Becoming a veterinarian

The chick hacker

She lives in a rural area, 5 hours away from the closest regional capital. She is an only child and the popular girl in her class having the power to lead and influence her friends and other students in the class. She is not a great student, but when she is encouraged and has a good team, she is able to come up with good ideas and create nice projects. Her parents are divorced, and her mom supports her and tries to give her everything she needs to be good. Her mom is well known for being engaged in helping the community and creating a better environment for everyone, which transforms her into a big potential community leader. She loves to receive attention both from her peers and teachers to show her capabilities and receive help in her work. She loves technology and knows a lot of tools and tricks for creating material for her social media

Time to school:
15 minutes walking or 5 minutes by motorbike
Access to smartphone:
Yes, she has his own cellphone
Access to the Internet:
Yes, she has a mobile plan
Dream:
Going to study abroad

The immigrant worker

He lives in a rural area, 5 hours away from the closest regional capital. He is a migrant from Venezuela and arrived in Colombia a couple of years ago with his parents and 2 siblings. He works in the afternoons and weekends to help his parents on the farm in order to sustain the family. Despite having a tough life, he keeps a great attitude at school and shows interest in developing all the study activities during class. He has no time for doing homework due to his work duties. He is independent and he has his own money thanks to his work at other farms. He does not have a lot of support from his parents, who are busy working to keep their home in decent living conditions.

Time to school:
50 minutes walking or 15 minutes by motorbike
Access to smartphone:
Yes, but only at home
Access to the Internet:
Occasionally through prepaid plan
Dream:
Having his own farm

The applied genius

He lives in a rural area, 30 minutes from the closest urban center and 3,5 hours away from the capital. He has some family that lives in the city and then is highly influenced by the city mindset towards studying, technology, and life goals. He is motivated to become a great professional and help his community in the future, being conscient of all the opportunities he can have by studying and putting effort into his daily life. He is a natural leader and expresses a lot of energy toward his teachers and peers. But when demotivated he also becomes a big influencer on his peers. He lives with his mom, and despite she is busy working for giving him and his siblings all they need, she supports and helps him as much as she can.

Time to school:
20 minutes walking
Access to smartphone:
Yes, but only at home
Access to the Internet:
Occasionally through prepaid plan
Dream:
Becoming a doctor

The unmotivated worker

He lives in a rural area, 5 hours away from the closest regional capital. He comes from the city and therefore is highly influenced by the city mindset in terms of the willingness to money and get luxury items. He works on farms and also as a bus assistant, he is fond of money and does not attend school every day because he prefers to go working and get money. He still goes to school and does the school assignments only to please his mom, who pushes him to study and become a professional in the future.

Time to school:
40 minutes walking or 10 minutes by motorbike
Access to smartphone:
Yes, he has his own cellphone
Access to the Internet:
Yes through a mobile subscription
Dream:
Having his own bus

Once the results and insights from the experiment were analyzed and discussed, the final proposal composed of a future vision, a strategic roadmap, a tactical roadmap, a contents structure overview, and specific methodologies, tools, and materials for the 2022 version was developed, from which, the strategic proposition will be explained in this chapter.

4.1. Future vision

After having a clear approach to the program based on the expected impact and the context, answering the main problem faced by "Más Por TIC" in terms of the program, which is establishing a clear future vision and a path for achieving that future vision, a design road-mapping approach is taken to tackle this challenge. For this aim, Trend research, referents scouting, 11 interviews, and a co-creation workshop were hosted, and the results of this process are expressed in a future vision considering the camp and the ecosystem within the NGO, a strategic roadmap, and a tactical roadmap.

4.1.1. Future vision proposal

In 2028, "Más Por TIC" becomes a rural community knowledge hub. "1,2,3 x TIC" will be a space for educating adolescents in rural areas, so they develop an entrepreneurial mindset focusing on generating soft skills, whilst they are provided with access and knowledge to updated digital tools. The future of the participants will be boosted by the connection to academic and professional opportunities, integrating them as actors from the countryside and the city. This effort will contribute to reducing the inequity in Colombia"

This future vision is composed of 4 main parts, "1,2,3 x TIC" which is the main focus of this graduation project, the platform "Cultivo red", a personal growth moment, and finally "Más Por TIC" as the mother and unifying entity.

Future vision 2028

Figure #10: Future vision. Own source

Chapter 4: Strategic proposition

4.1.2. 1,2,3 x TIC

Creating an entrepreneurial mindset to decrease inequity and establish the future entry points for the rural digital alphabetization.

"1,2,3 x TIC" will act as the entrance for the rural youth into the "Más Por TIC" network, educating them with entrepreneurial skills and digital tools, stretching soft skills, so they become the entry point for the digital adoption in the rural areas. The camp aims to have multiple effects: The first one is to reduce the current gap in education within rural areas and the cities; secondly to start the entrepreneurial education in the adolescents, so they develop an entrepreneurial mindset and growth mindset, allowing them to realize that they can create new things by spotting opportunities and finding the right solutions. In addition, it is aimed to plant the entrepreneurship seed, so they might become rural entrepreneurs in the future, helping to develop their territories. Thirdly, "1,2,3 x TIC" will connect the most promising participants with possibilities for future career development, so they can more easily shape their life project. And lastly, "1,2,3 x TIC" aims to create the needed network and knowledge for, in the future, the participants might become part of "Más Por TIC" facilitating to deliver of the services from the perspective of someone who belongs to the community.

Figure #11 1,2,3 x TIC. Own source

4.1.3. Cultivo red

Weaving networks of knowledge, from the community, with the community, for the community.
"Cultivo red" Will be a [platform] where all the knowledge comes together, it will serve as a support for the camp, but also provide new technical resources to the community in different fields and levels. This platform is not just a website, but a general network of people, resources, tools, and knowledge, which will also be used for providing the services by "Más Por TIC".
"Cultivo red" will become the key tool for allowing digital alphabetization in the rural areas, since it considers the different stakeholders, generations, limitations, and existing knowledge of the possible stakeholders and beneficiaries.

Figure #12: Cultivo red. Own source

4.1.4. Personal growth

Growing together is as important as individual growth.

Finishing the program "1,2,3 x TIC", is just the initial step for the participants. After it, they will keep developing their life project, making use of the new knowledge and mindset, plus generating curiosity for possible new paths. The final stage of the camp will connect the most promising children with scholarships, and possible paths for the future, whilst keeping a connection with "Más Por TIC" and their community. They will also have access to the [platform] "Cultivo red" to keep acquiring new technical skills but also share the knowledge they can generate using it. After they develop themselves to a certain point, they will become whether part of the network as local leaders, entrepreneurs, technicians, or part of "Más Por TIC" helping to deliver the services to the community.

Figure #13: Personal growth. Own source

4.1.5. Más Por TIC

Más Por TIC is the rural community knowledge hub, creating a continuous loop of learning.

"Más Por TIC" Will become an ecosystem generator, using new generations for decreasing inequity, by bringing digital alphabetization and an entrepreneurial mindset to the Colombian countryside; combined with technical skills, creating a continuous loop of knowledge, learning, and growth for the communities that belong to the network.

Figure #14: Más Por TIC. Own source

Seed   **Grow**   **Flourish**   **Future vision Harvest**

"1,2,3 x TIC" starts educating adolescents in entrepreneurial mindset and digital skills with a regional approach, involving teaching environments, family, and territory centered challenges.

Educating educators with an entrepreneurial mindset starts, expanding the program to multiple regions in the country, involving real selling scenarios.

The boot camp takes of bringing the most promising students from the initial phase together in a one week camp, connecting them to other adolescents and possible future career prospects

"Cultivo Red"

The participants develop curiosity for new digital tools whilst developing entreprenurial soft skills and a growth mindset

Entrepreneurship becomes a common topic in the classrooms, encouraging innovation and creativity

Participants use the camp as a take off platform for developing their professional career

In 2028, Más Por TIC becomes in a rural community knowledge hub. "1,2,3 x TIC" will be a space for educating adolescents in rural areas, so they develop an entrepreneurial mindset focusing on generating soft skills, whilst they are provided with access and knowledge to updated digital tools. The future of the participants will be boosted by the connection to academic and professional opportunities, integrating them as actors from the countryside and the city. This effort will contribute to reduce the inequity in Colombia

4.2. Road mapping. The Scenarios for achieving the future vision

Strategic Roadmap

Tactical Roadmap

Seed　**Grow**　**Flourish**

Future vision Harvest

Trends

Youth as technology adopters	Video as leading of content		
Pre-paid plans to avoid contracts		Personalized learning	Bite-sized learning
Master based grading	Experiential learning		
	"Learn from everywhere" approach		

Value

Money sources
- Individual donations
- Grants
- Institutional donations
- Public resources
- Paying schools
- Professional services

Value for partners
- Personal achievement
- Society improving
- Exposure
- Duty
- Productivity & competitivity

Value for +xTIC
- Network
- Knowledge & Exposure
- Exposure
- Exposure
- Clients

1,2,3 x TIC program

Main features
- Pitch event graduation
- Territory potentials
- 8th & 8th grades
- External mentors for specific sessions
- Community entrepreneurs and teachers as facilitators
- Updated digital tools
- Parents involvement
- Entrepreneurship methodology

- Mentorship program
- Alliances with schools
- Iterated program
- Expand regions
- Materials update

- Expand sponsors
- Expand regions
- Digital graduation Pitch
- Adaptable program
- Expand to 6th & 7th grade
- Paying schools
- Outside school hours option
- Physical business fair
- Education for educators
- Online weekly support session
- Physical / digital toolkits

- Iterated program
- Materials update

- Connect to other adolescents
- Scholarship possibility
- Boot camp for most talented
- Self exploration workshops
- Materials for next level ideas
- Networks for ideas take off

- Bridging program
- Iterated program
- Camp volunteering program
- Iterated materials

Materials
- Short video lectures
- Physical toolkit for kids
- Physical toolkit for parents
- Practical workshops
- Hands on exercises

Camp edition

2022	2023	2024	2025	2026	2027

Alliances

Foundations
- Luker foundation
- Alpina foundation
- AFE Colombia
- Colombia digital

Education
- Tu Delft
- Regional universities
- Platzi
- Sena

Platform

Relation with the camp
- Hosting camp materials for: Students, Parents
- Hosting camp materials for: Facilitators, Students, Parents
- Education platform for: Facilitators, Students, Parents, Graduates, Community

Stage
- Exploration and conceptualization
- Development and experimentation
- Establishment and content generation

Technology

Accessibility
- 53% Country connected
- Free wi-fi in every populated center
- 70% Country connected
- 80% Of Internet connection in rural areas
- Reduction in Internet fees

Device
- Continuous decrease in smartphones price
- 82% of smartphones adoption

Assess

	Seed			Grow		Flourish
What	Attitudes and intentions	Self perception	New mentors /engagement	Attitudes and intentions	Tools literacy	Applicants to boot camp
How	Polls & interviews	Polls & interviews	Recruiting	Interviews	Practical exercises	# of applications
Whom	Children, parents & mentors	Children	Previous participants	Mentors and principals	Participants	Participants

*Based on intercomp framework

"Cultivo Red"

In 2028, Más Por TIC becomes in a rural community knowledge hub. "1,2,3 x TIC" will be a space for educating adolescents in rural areas, so they develop an entrepreneurial mindset focusing on generating soft skills, whilst they are provided with access and knowledge to updated digital tools. The future of the participants will be boosted by the connection to academic and professional opportunities, integrating them as actors from the countryside and the city. This effort will contribute to reduce the inequality in Colombia

+x TIC

4.2.1. First Scenario: Seed (2022-2023)

In this first scenario, the seed of the change is planted, "1,2,3 x TIC" is launched in its 2022 version, using entrepreneurship experience as a method to provide the participants of the program with an entrepreneurial and growth mindset, the program will be based on a practical project based on an exploration of the potentials and needs of the territory, for creating a challenge to use as the base for the rest of the program. These scenario challenges will make it easier for the participants to come up with specific ideas and will also help the mentors and program coordinators to keep track of the process of the participants, having a connection with real problems and real scenarios that encourage participants in the process. The participants will create a real project based on this scenario challenge, so in the end, they can actually have a real experience commercializing their products or services. Living the experience of the main stages of identifying an opportunity, looking for viable, feasible, and desirable solutions, and bringing that solution to reality. This process, combining entrepreneurship methods in an iterative way, aims to mainly provide the participants with soft skills, highly needed in their future careers as professionals, leaders, entrepreneurs, etc. in the process of improving their living conditions and those of their communities. This process will also be accompanied by the involvement of new updated digital tools that allow them to be more efficient and create better solutions, whilst promoting the digital alphabetization in their rural communities. Collaborative learning is highly important for developing the entrepreneurial mindset, that is why the participants will be encouraged to work together with other participants, getting to know others' ideas and others' realities; the involvement of the family and community is important for the rural communities (Escandón D. et al, 2019), that is why the program will also stimulate the participation of the family in each of the stages of the process, making them part of the entrepreneurship team of each participant, by providing them physical kits for guidance and participation. The program will be divided into theory learning moments and hands-on exercises, for the theory learning moments, single short video lectures will be created so the children can learn in an intuitive and smooth way, after the lecture time, the participants will face hands-on challenges making use of physical kits accompanied by the facilitators, so the learning mainly happens by own experiences and mastering the knowledge. As a closure event, the participants will have a pitch moment, where they will tell the others their stories and ideas and they will be encouraged to use their new knowledge and tools to market their new ventures and generate real profit.

The facilitators will be a team composed of a teacher and an external facilitator from the community who has experience in entrepreneurship and group facilitation. In specific sessions of the program, an external expert facilitator will also lead the session, in order to keep the engagement, newness, and excitement of the process, whilst being able to keep the trust and management of the class. The facilitators will be trained by being taken practically through the program and receiving specific materials as facilitation and mentoring tools.

The program will be carried out in a total of 15 sessions which will take place for 5 weeks, three times a week, two hours per session. Avoid Fridays for the sessions, in order to avoid the tiredness of the week and excessive disorder in the dynamics of the class. In this scenario, 1,2,3 x TIC will be executed only in the 8th and 9th grades in a deep rural scenario, in order to ensure the effectiveness and relevance of the program in its initial stage. In this scenario, only the "Orphan dreamer", the "Smart hacker", the "cared player", the "chick hacker", the "Immigrant worker", and the "unmotivated worker" types of student personas will be part of the program.

"1,2,3 x TIC" will include as part of its methodology a rewarding system, where the students will be awarded tokens for accomplishing different challenges, which later they will be able to exchange for awards which include phone data packages, candies, and free time for doing sports.

For the 2022 edition of the program, the collaboration with TU Delft University is a fact through the present graduation project. In addition, an extra relation will be established with the international entrepreneurship minor program, which will support both this program and especially the creation of "Cultivo red" with young volunteers that will use their professional skills to help the organization to develop the future vision. Another important alliance is with Luker foundation, which in addition to financial resources, will also provide territory knowledge and established relations with rural communities. For the 2023 version of the program, the alliance with the Alpina foundation is proposed, since they have operations in Cundinamarca, which is a department where the foundation has its biggest influence and operations, this would allow it to have a better impact and grip on the current regions of action.

For version 2023, new features will also be added to the program. With the new alliance with Alpina, it will also be possible to expand to other territories and add an extra scenario challenge that allows a different approach based on regional context. The materials and curriculum of the program will also be iterated, based on the learnings from the 2022 version. As the main extra feature, the mentorship program will also be launched, allowing previous participants to be mentors of the new participants, with the aim of keeping the engagement with the community and "Más Por TIC", promoting the knowledge to be transferred within the community.

In terms of technology, the different programs, and projects of the government for granting access to the internet to the rural population will hopefully allow decent access to the digital materials of the camp. This also entails that the objective population needs to have minimum access to the internet and access to at least a smartphone, and preferably a laptop or desk computer, so they can have access to all the materials provided by the program. The program will provide basic smartphones if needed, to ensure the right application of the proposed knowledge and skills.

In this scenario, the monetary resources will come from individual donations, grants, and institutional and corporate foundations, as it was mentioned before. The grants and corporate foundations will also grant the program and the foundation knowledge and exposure, so more doors and networks can be generated. In retribution, the program "1,2,3 x TIC" and "Más Por TIC" will generate an impact on society, and exposure to the ally institutions.

This form of the program also responds to different local and world trends in education and technology consumption, where learning from everywhere, experiential learning, master-based learning, and video as the leading format in media are key aspects included in the program. The pre-paid way of data mobile plan, highly used in Colombia, is also an important aspect to consider when the connection in certain moments of the program needs to be ensured to have the expected results of the program. Hence, as a part of the materials provided by the program, wifi connection will be ensured in each one of the sessions.

This scenario also kicks off the [platform] "Cultivo red" since it needs to host all the material and knowledge that needs to be delivered to the participants and their parents, plus the generated network of participants and communities.

Measuring the impact is essential, hence, different strategies are proposed. In the first place, polls and interviews will be done before and after both the participants, their parents, and facilitators, to assess the change in their attitudes and intentions towards entrepreneurship skills. These interviews and polls of the participants will also be used to assess their self-perception of their own capabilities of executing new projects and ideas. An evaluation matrix will also be implemented, in order to assess in a quantitative way the immediate and mid-term impact of the program. Lastly, for version 2023 the previous participants that want to keep being part of the program as mentors, will also be an indicator of the compromise engagement with their communities.

"1,2,3 x TIC" starts educating adolescents in an entrepreneurial mindset and digital skills with a regional approach, involving teaching environments, family, and territory-centered challenges.

Figure #17: First scenario- Seed. Own source

4.2.2. Second scenario: Grow (2024-2025)

In this scenario, it is time to grow the seed. A school environment is a place that is already conceived for education, but in rural areas in Colombia, it is especially important, since some children do not have time after class to keep doing educational activities because of different reasons and situations. In addition, an opportunity due to the law emerges, since it is mandatory for schools to implement entrepreneurship education within the education curriculum. Therefore, in this scenario there will be an extra previous stage where facilitators, including teachers from schools, get educated on how to be facilitators of the program and get an entrepreneurship mindset themselves, teaching them entrepreneurial skills and all the tools they need to know to facilitate the program for the children. The teachers will not be lecturers, since this core knowledge will keep being transmitted to the kids using digital and physical material, but this will transform the schools into innovation centers where the participants can go through their entrepreneurial experience in a safe space, where it is easier to collaborate with others and receive guidance from their own teachers and local entrepreneurs, who already host the trust from the community. When the actual program for students starts, they will keep the access to digital tools and content, mixed with the physical kits for them and their parents, but will have the physical experiences together with other students and fellow members of the community, having a hybrid way of learning, integrating the best of the two worlds of digitalization and physical experience. The teachers and other facilitators will also receive an online weekly session where they can solve the different doubts and issues they might be experiencing facilitating the program, receiving support from the program team of "Más Por TIC".

In this scenario, different types of rural schools will be accepted, bringing schools with more resources. In this case, these schools will pay for the program, and will have the possibility of conducting the program within school hours, but also outside school hours, as an extracurricular activity. Expanding the 1,2,3 x TIC network to different profiles of schools and students, including extra sources of income for Más Por TIC. In addition, 6th and 7th grades will be included in the program having a flexible program that can be adapted to the knowledge and social conditions of the school where it will take place. This expansion also includes the inclusion of the "questioner" and the "applied genius" student personas.

The fact that the program is being hosted in an expanded way in schools also brings the possibility of hosting a final physical entrepreneurship fair, where the participants can showcase their new venture, using all the knowledge and new tools they acquired for getting actual profit for their solutions. After this physical fair happens, the final digital graduation will take place together with all the participants of the program in different regions, where some of the children will be able to pitch their ideas and show their experiences to other adolescents throughout the national territory.

In this scenario, the alliances also increase. An alliance with the association of familiar and corporative foundations (AFE) is suggested, this association groups Luker foundation, Alpina foundation, and several other foundations distributed in all the national territories. This alliance, together with the new educating educators approach, will allow expanding the program to multiple territories, having a differential focus per region, that allows a better and bigger impact in rural Colombia. The alliance with regional universities can also be executed, thanks to a government project for the universities to help rural schools to improve their curriculum and equip the teachers with updated knowledge (Education ministry., 2018) For the 2025 edition, an alliance with Platzi is also suggested, so the program can start granting access to extra resources and opportunities in the shape of collaborations and scholarships to some of the participants of the program. This alliance with Platzi is especially important since it is the leading platform in Latin America for online professional and technical education, which can perfectly be the next step taken by the most motivated participants of the program.

This scenario also responds to the trends of personalized learning, since the teachers can have better tracking of the students' process, together with the previously established mentors program. The bite-sized learning trend is also taking into consideration, understanding that students can learn better when they learn from each other's experiences and processes. The funding in this scenario will also expand, applying to public funds, since the foundation would already start working with rural public schools and their teachers. In terms of technology, it is expected that by this stage 70% of the country is already connected and has access to the internet and technological tools, which facilitates not just the approach of educating educators, but also the access to digital material from the participants and their parents.

The [platform] "Cultivo red" also expands, being in the stage of "development and experimentation" hosting now not just the materials and resources for students and parents but also for the teachers, facilitating the new approach of the program.

Educating educators with an entrepreneurial mindset starts, by expanding the program to multiple regions in the country, involving real selling scenarios.

Figure #18: The second scenario- grow. Own source

4.2.3. Third scenario: Flourish (2026-2027)

In this scenario, the program flourishes and allows all the participants to flourish within it. For the 2026 edition, the most important new feature of the program is the launching of the physical Bootcamp, which takes place after the basic program at schools, and the entrepreneurship fair in each of the schools. This Bootcamp is where the most promising participants get together to share and take their ideas to a next level, whilst they have fun and get to know many other participants from different regions of the country. This will allow them to broaden their minds and perceptions of the world. The participants will apply to this boot camp using the project they created in the initial stage.

In The Bootcamp, several activities but mainly personal growth and community activities will take place, making use of their already existing projects as the base for learning and interacting, New alliances with "Sena" plus all the previous alliances will allow the participants to get scholarships of different types for their future professional and personal career, always with the focus of helping their territories and communities.

In addition to the already existing mentoring program, an extra volunteer and mentoring program will be created for the boot camp, where youths from many backgrounds will be able to interact and guide each other, creating networks of people, knowledge, and common experiences, emphasizing on the similarities instead of the social differences.

The great network that "1,2,3 x TIC" will have already created for "Más Por TIC", will allow the organization to increase its income by professional service in digital alphabetization in rural Colombia, also taking advantage of the estimated 80% of coverage in internet and digital tools access. With this, this scenario will start to see the closure of the cycle generated by "Más Por TIC" using the program to be able to penetrate more efficiently into the rural communities in Colombia.

The previously stated will also be present in the [platform] "Cultivo red", which from that point will also provide different resources to the general community, offering knowledge created directly from the communities for the communities, whilst also working as an education platform for teachers, participants of "1,2,3 x TIC", and ex-participants of the camp.

Measurement will also expand in this stage, taking into consideration the number of applications received for the boot camp, which will show the interest and attitude towards entrepreneurship obtained during the first part of the program.

To sum up, In 2027, "1,2,3 x TIC" is a program for adolescents between 11 and 15 years old, that takes place physically in rural schools, in which a real entrepreneurship experience is carried out, learning through experience, and games, using territory potential scenarios identified by the participants. The school is the main environment where the teacher and a community entrepreneur are the main facilitators, receiving sporadic external experts for specific sessions. The school environment is combined with the digital environment, where digital tools, through the platform "Cultivo red". The participation of the family will be essential during the program, being part of the entrepreneur's team. The program will stretch on the development of soft skills to generate an entrepreneurial mindset while granting access to new tools and technical knowledge through the platform. Both facilitators and family will have their own support kit, to know how to support, mentor, and guide the adolescents' process. Facilitators receive prior virtual training on how to facilitate the program and develop an entrepreneurship mindset themselves, and there will be support sessions for mentos to solve doubts at each stage of the process. In the end, an entrepreneurship fair will be held, where the participants will be able to exhibit and sell their products to the community, as a closing of this stage of the program. From now on, the young participants will be part of the [platform] "Cultivo red" having access to extra educational content for rurality, not only as consumers of content but also to be co-creators of community knowledge. The following week, using the new tools acquired, the most motivated students will be able to apply to the face-to-face "boot camp", where young people from different communities will meet in a co-creation space to take their ideas to the next level while sharing experiences and learning together with other rural youths. This second stage will be connected to the possibilities of university, technical or entrepreneurship scholarships for their near future as entrepreneurs, professionals, and rural leaders.

The boot camp takes off bringing the most promising students from the initial phase together in a one-week camp, connecting them to other adolescents and possible future career prospects.

Figure #19: Third scenario- Flourish. Own source

Chapter 5: Program proposition

5.1. Structure and contents

As mentioned before, this master's graduation project specially develops the first scenario, its structure, contents, and tools. As a starting point for this, Topics and general structure are defined. As the initial parameter, it is the 7 weeks length structure as a base following what was executed in previous versions of the program "Soy campo soy Cambio".

For finding and proposing the topics' structure and specificities, research in literature, frameworks, and referents worldwide of similar programs was done. Understanding similarities, main differences, keys to success, and main challenges according to the program givers, independent studies, and reports. The initial structure was later iterated based on the insights and learnings gathered from the field experiment.

From the theoretical perspective, studies, and frameworks on how to measure entrepreneurial mindset and disaggregate the main abilities that compose this mindset were analyzed. From this, 5 studies were considered: Bacigalupo, M., et al, 2016; Deveci, İ., & Seikkula-Leino, J., 2018; Bisanz, A. et al 2019; Morris, M., & Tucker, R., 2021 & Bager, T., 2011. Of these articles and studies, the one proposed by Bacigalupo, M., et al, 2016 was selected as the base for the content, due to the approach it takes and its depth in the research for proposing the framework; this in addition is a suitable way to assess the impact of the program. An extra factor is added to the framework: "digital literacy" thus it becomes completely suitable to what is proposed in the strategic direction and what the NGO does on its basis. You can see the proposed framework in the figure #20: Adapted version of the framework proposed by Bacigalupo, M., et al, 2016.

For the Main structure of the modules, 8 similar programs focused on entrepreneurship for children and adolescents were contrasted to find common topics and knowledge that is needed to provide in an entrepreneurship project-based approach. It is important to take in mind that these programs were created for different scenarios and contexts. The programs analyzed were the power play young entrepreneurs (Hittel, J., 2013) from Canada, the Youth start entrepreneurship program from the European Union (European Union., 2018), The financial literacy and entrepreneurship for kids and teens (Kidpreneurs., n.d.) from USA, The Kid entrepreneurship education (KidEntrepreneurship.com LLC., 2022) which is applied in several countries including countries in Latin America, The entrepreneurship for kids program (Kidspreneruship., 2022) in USA, The bornpreneur program (Bornpreneur., 2017) in USA, and the previous versions from "soy Campo soy Cambio".
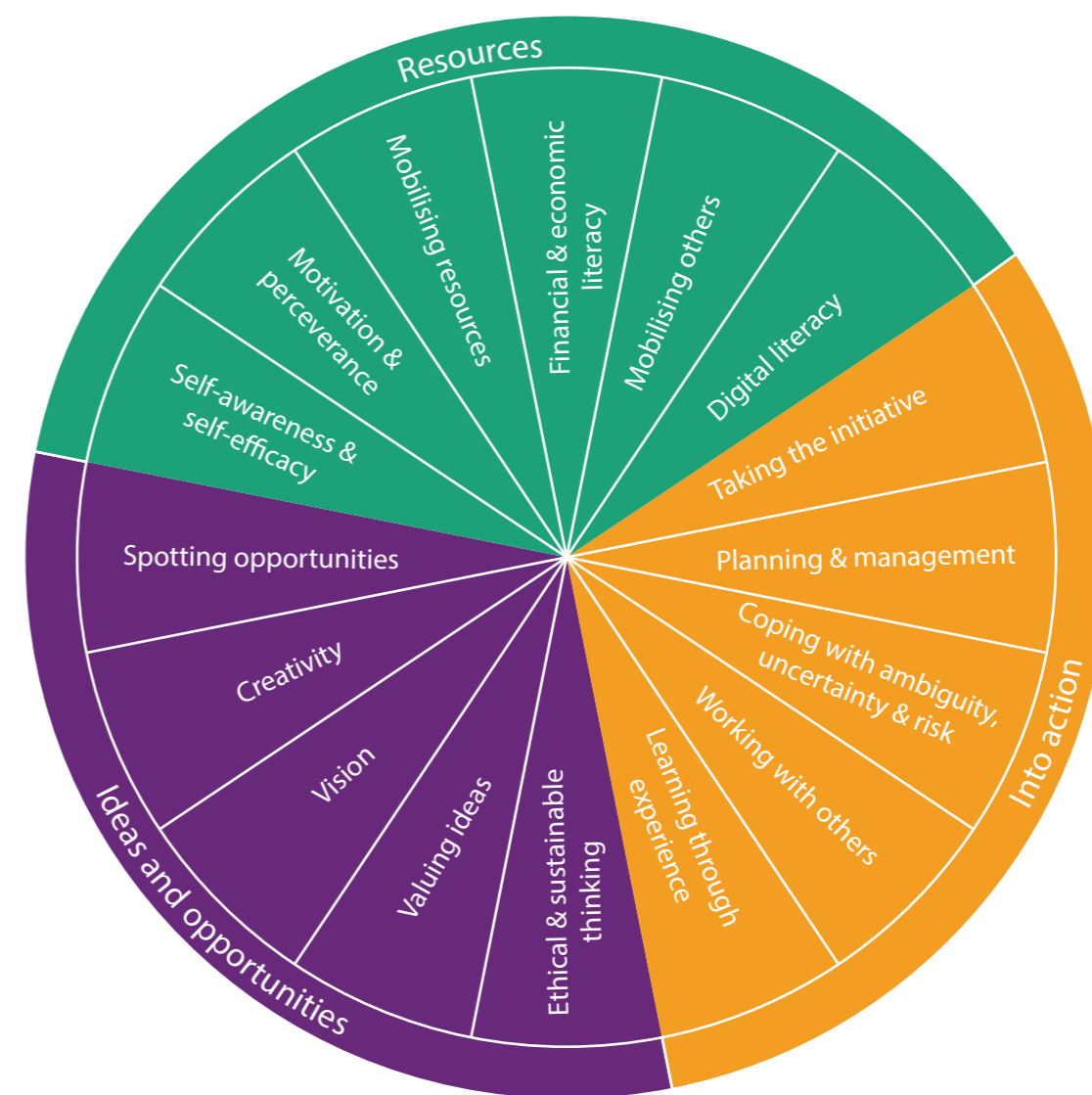
Figure #20: Adapted version of the framework proposed by Bacigalupo, M., et al, 2016

The contents and structure of these referents were analyzed using their own information, taken from their websites, plus white papers. Contrasting them with independent studies and reviews of those specific programs. The structure and contents were later clustered into themes to find the main topics to tackle in this kind of education approach, finding twelve initial themes: problem/opportunity finding, understanding the client, processes and operations, new business finances, branding & marketing, setting business models, communicating ideas, prototyping, who is an entrepreneur?, risk management, reflecting on the process, and events production. These themes were then reclustered in order to fit the initial structure of 7 weeks / 7 modules, arriving at the main modules of the program. Once the modules were proposed, the specific topics and challenges were also included, taking into account the elements of the clustering process previously described.

Since the program will take place during school hours, it is important that the program fits with the mandatory curriculum from the Colombian government, hence,

research in policies and literature was again executed, analyzing 2 main documents of the Ministry of education (Ministry of national education, 2016; Garcia, W., 2018). This curriculum was later contrasted with the blocks of the program, partnering every block with specific curricula courses, making the program suitable for schools, you can see the results of the clustering process in appendix #5: structure and contents clustering.

This initial structure proposal was tested on the previously described experiment. From which an extra module of introduction and self-reflection was added. Alongside the modules, the general structure was iterated, switching from a seven weeks structure to a five weeks structure, divided into modules of one or two sessions, distributed in three sessions per week of two hours, with a total of fifteen sessions through the five weeks. This, answering to the challenges derived from the time usage of the facilitators and school hours, and the loose of focus that the students showed at the end of the second hour.

You can see the final proposed structure of the program 1,2,3 x TIC in the figure #21:

Program structure

	1. Introduction and self reflection	2. Problem / opportunity finding through customer understanding	3. Turning an opportunity into an idea	4. Prototyping, testing and iterating	5. Branding & Marketing	6. Business model design	7. New business finances	8. Ideas communication
Specific topics	Intro to entrepreneurship; Intro to project; What they can achieve	Intro to problem finding; Context mapping; Customer empathy	Intro to ideation; Design thinking	Intro to ptp & testing; What is a MVP; Fast prototyping; Concept testing	Intro to branding & marketing; What is a brand; Naming; Marketing strategies; Digital marketing; Launching strategy	Intro to business model; What is value; Stakeholders mapping; Types of business models	Intro to business finances; Pricing and product life cycle; Business financial basics; Selling processes; Break even point	Intro to idea communication; Public speaking; Elevator pitch; Story telling; Story boards
Challenge	Co-map of how do they imagine their community in 5 years → Co-mapping what are the territory potentials and main issues → Co-map how to use those potentials and overcome the issues	Make a stakeholders map → Choose who is going to be your customer or ally → Propose a problem to solve or opportunity to explote	Look for similar solutions and possible competitors → Make a brain storming session → Select the best idea to solve the problem or use the opportunity → Talk to your customer to know what do they think about your idea	Create different prototypes to test varios aspects of your product → Test it with customers to get feedback from them → Iterate on the design based on the feedback you get → Create a final prototype based on your new design	Create the brand DNA of your company → Create a name, a logo and a slogan → Create a social media for your company → Create material foor your company and publish it your platform	Identify all the steps you need to produce your product → Identify all the stakeholders related to your project → Create two options of business model for your product → Choose one and elaborate on it identifying the value exchange	Stablish how much is it to produce your product → Stablish the price of the product based on customer feedback → How many units do you want to sell in the first month? → Stablish how much will be your revenue and profit in the 1st month	Use the Master canvas to summarize your business idea → Use the wow generator statement to create your elevator pitch → Create a video story for showing your business idea → Create your sales pitch with the story telling mountain
Digital tool	Google drive	Google drive; Google maps	Google drive	Canva; Pixlr	Kapcut; Canva; Instagram; Facebook; Tik tok	Google drive	Google drive; Google sheets	KapCut
Curricular connection	Social sciences, history, geography, political constitution and democracy; Ethical and human values education	Social sciences, history, geography, political constitution and democracy; Technology and computing	Artistic and cultural education; Ethical and human values education	Artistic and cultural education	Artistic and cultural education; Technology and computing; Humanities, Spanish language and foreign languages	Social sciences, history, geography, political constitution and democracy	Math; Technology and computing	Humanities, Spanish language and foreign languages; Artistic and cultural education; Technology and computing
Timing	1 session	2 sessions	2 sessions	2 sessions	2 sessions	2 sessions	2 sessions	2 sessions

Week 1 — Week 2 — Week 3 — Week 4 — Week 5

Blocks dynamic: Short video lectures before each sesion → Co-summary of the theory → Deliver the material for the activities → The "facilitators" guides the students through the workbook and materials of the challenge → Clarifying homework

Figure #21: program structure. Own source

5.2. Specific contents and methods

With the general structure in place, the next challenge was to develop the contents and convey the contents in a way that the students engage with the new knowledge, perceive the change and the impact can be measured. For this aim, research in referents of knowledge gamification and hands-on learning was executed and then used to host a brainstorming session with other three designers, in order to come up with different proposals and insights on the type of activities that could be implemented. This brainstorming session was then shared with the director of the organization, which added extra ideas and possibilities. With this information, the first three modules were developed for applying them in the field experiment. After executing this experiment, these initial modules were iterated, plus developing the other five modules of the program which will be described in this section. These modules make use of different types of materials, which are composed by:

- Students workbook: My first entrepreneurship journal [Mi primer diario de emprendimiento], see this workbook in appendix #6.
- Parents workbook [Bitácora de padres de familia], see this workbook in appendix #7.
- Facilitators guide [Guía para faiclitadores], see this guide in appendix #8.
- Ice breakers book [Rompe hielos], see this guide in appendix #9.
- Impact measuring sheet, see this guide in appendix #10.
- Materials for modules sheet, see this document in appendix #11.
- Grading sheet for teachers, see this document in appendix #12.

Figure #22: Parents workbook. Own source

Figure #23: Students workbook "My first entrepreneurial journal". Own source

Figure #24: Facilitators guide. Own source

"1,2,3 x TIC" uses a rewarding system as a way to motivate and engage students, but also to teach them about money management and community and team mindset. The students will be able to gain tokens for accomplishing the different activities, doing extra activities, or showing extra motivation and engagement. During the whole length of the program, the students will be able to exchange these tokens for different prizes that have different prices according to their value. The prizes that students can gain are individual candies, candies packages for the whole classroom, Dataphone packages, and free time for doing sports.

In order to avoid disorder in the classroom in case a group finishes before the others, or the activities are accomplished in less time than initially planned, the program proposes extra activities to do in their entrepreneurship journal, which the teacher can score as a part of the course.

The students will receive one video vía WhatsApp with the theoretical content for the session, which they must watch before the session. This video will be co-summarized, with the guidance of the facilitators and participation of the students. The students must take notes of this summary in their entrepreneurship journal as part of their grade.

The smartphones provided during the sessions to the students need to be equipped with the next applications: google drive, google sheets, Canva, Kaput, Instagram, Facebook, and TikTok.

5.2.1. Module 1. Introduction and self-reflection

In this first module, the students will understand the program, its dynamics, and its importance for their present and future life. In addition, they will reflect on themselves, their communities, and their territories for finding possible opportunities to tackle their project.

The program will start with an introduction round where both students and facilitators will quickly mention their name, their favorite fruit, and a fun fact about themselves if they want to. The facilitators will make a special emphasis on their experience in entrepreneurship, and how entrepreneurship has been present in their life.

After this, the students will watch an introduction video about what the program is, and what is entrepreneurship. In addition to the video, the facilitators will explain the general rules and compromises for the program, to later summarize both the video and the rules together with the students.

To initiate the process, by using the community mapping canvas (see this canvas in appendix #13: community mapping canvas) The facilitators will guide the students to reflect on how do they imagine their territory in 5 years, identifying the main potentials and main issues of their territory and propose how to use those potentials for solving those issues.

Once the potentials and issues are identified, the students will form groups of three students, give the group a name and select one of those potentials or issues they want to use for their project as a group, writing this initial compromises on their entrepreneurship journal.

To finalize the session, the students will record a video presenting their group, the members of their group, the potential or issue they chose, and why they are the best group to tackle that challenge, for later exploring the first digital tool: google drive, uploading their video to the shared google drive folder previously created.
For this session, it is necessary to have at least one smartphone per group and have wifi for the whole classroom.

Module 2. Problem/opportunity finding through customer understanding

In this second module, the students will learn how to identify an opportunity or a problem in their surroundings which later might be turned into a business opportunity, learning about context mapping and customer empathy.

The video for the first session of this module is about problem finding and context mapping. After the theory summary, the first invited speaker: a local farmer will tell the students about the things that are produced on the territory, the things that might be produced, and perceptions of territory potentials.

For the first activity, the groups will create an actors map of the project they chose, by building a spaghetti tower where the joints are made with color clay. Each one of the clay joints represents one actor and the spaghetti represents the relationships and values they exchange. The challenge is to create the most interesting building whilst representing the actors' relations correctly. Once they finish, The groups will take a picture of their tower and upload it to the google drive folder.

The second activity of this session is to identify where those actors are located. For this, they will use google maps, pinning the location of each one of those actors in or outside their territory. With this activity, they will understand better the geography of their territory and the distribution of actors and resources that belong to their selected project. When they finalize the activity, they must take a screenshot of google maps, and upload it to the google drive folder.

To finalize the session, They will choose one of these actors as their main ally or client for their project, and write it in their entrepreneurship journal. This main ally can also be their own family farm in order to make use of their available resources.

For the next session, they must speak with the actor they selected as their main ally, and write down in their entrepreneurship journal the main insights and conclusions of their chat.

For the second session of this module, the video is about customer empathy. After the theory summary, the students will draw in their journal the picture they have about their ally or customer, to drop assumptions and preconceptions they might have for later creating an empathy map of their ally or customer.

For creating the empathy map, they will make a clay doll of their ally or customer, representing it in a not figurative way, expressing different facts, perceptions,

and desires using creativity and imagination. This doll needs to have some minimum parts where the students will locate the answers to the empathy map using pennants. The minimum parts are:

- Hat: Who are we empathizing with. What do they need to do?
- Eyes: What do they see?
- Mouth: What do they say?
- Body: What do they do?
- Ears: What do they hear?
- Head: What do they think and feel? Pains and gains

After finishing the empathy map, the students must take a picture of it and upload it to the google drive folder. Now that the students understand better their customer or main ally, they need to list 5 issues and potentials for later choosing one of them to solve or take advance of and continue the project by writing it down in their journal.

For the next session, their homework is to do desk research about the potential or issue they identified, looking for possible referents, existing solutions, and possible competitors or allies. They must write down or create a collage in their journal about the main insights they get from this task.
For the two sessions of this module, it is necessary to have at least one smartphone per group and have wifi for the whole classroom.

5.2.3. Module 3. Turning an opportunity into an idea

In this third module, the students will turn the opportunity or problem they identified into a business idea, learning about design thinking tools and ideation processes.
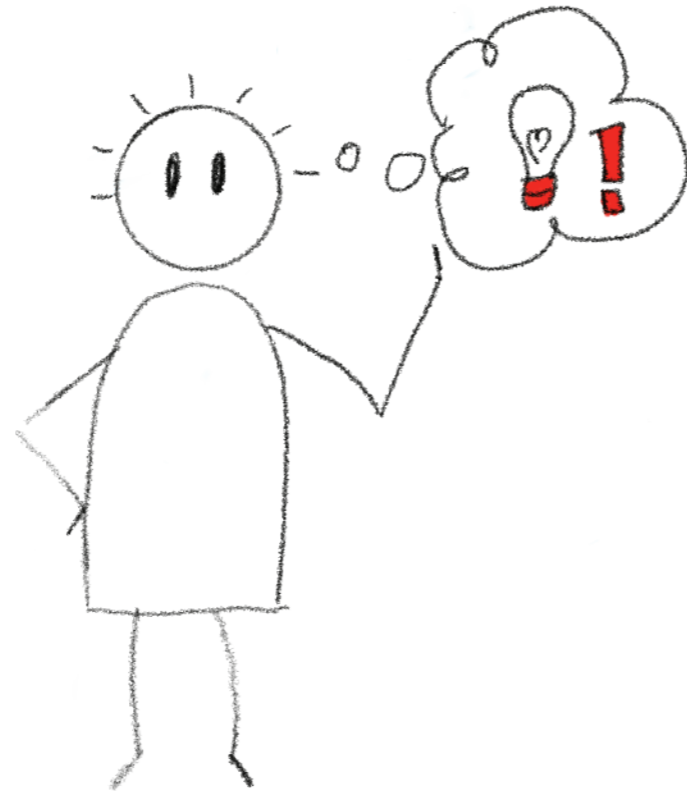
The video for the first session of this module is about design thinking and ideation. After the theory summary, the students will share the findings of their desk research with the other members of their group.

Using the understanding and referents the students now have about their challenge, they will do a brainstorming session for solving issues or taking advance of the potential of their territory and then evaluate and select one idea by using the brainstorming canvas (see this canvas in the appendix #14: brainstorming canvas). Now that they have a selected idea, they will draw it and explain it in their journal, and upload a picture of the brainstorming session to the google drive folder.

The homework for the next session is to speak with their parents to get their feedback and comments about it, Writing in their journal the main insights of this chat. For the second session of this module, they will first iterate on their idea based on the comments they got from their parents, by using the iterating the idea canvas (see this canvas in the appendix #15: iterating the idea canvas), generating the final concept of their project.

Now they have a clear business concept, and they will create the first prototype of it, by doing a role-playing exercise, simulating their concept from a customer or ally perspective, recording it, and uploading it to the google drive folder. Their homework for the next session is to show the record of their role-playing to their parents and get feedback from them, plus take to the class materials for prototyping their product or service.

For the two sessions of this module, it is necessary to have at least one smartphone per group and have wifi for the whole classroom.

5.2.4. Module 4. Prototyping, testing, and iterating

The objective of this module is to develop rapid prototypes to test different aspects of the business idea, based on viability, feasibility, and desirability.

The video for the first session of this module is about fast prototyping, testing, and what is an MVP (Minimum viable product). After the theory summary, the students will scheme or draw the final proposition on their entrepreneurship journal based on the feedback they got from their parents and learnings from the role-playing activity.

Having a clear business concept, they will start the prototyping process by defining and writing in their journal what aspects of their idea need to be tested, and create a testing plan to test those aspects and risky assumptions. To finalize the session, the students will make a prototype of their product/service that works for their testing plan, using the materials they brought, plus elements provided by the program.

Their homework is to execute the testing plan using their prototype with their users or allies and write in their journal the results of the testing process. In the second session, the students must redesign their product/services, making a scheme or drawing on the journals of their iterated concept. Having a final design, the students will create a final prototype including all the new elements they found through the testing process. When they finish, they will take a picture of the prototype and upload it to the google drive folder.

For the second session of this module, it is necessary to have at least one smartphone per group and have wifi for the whole classroom.
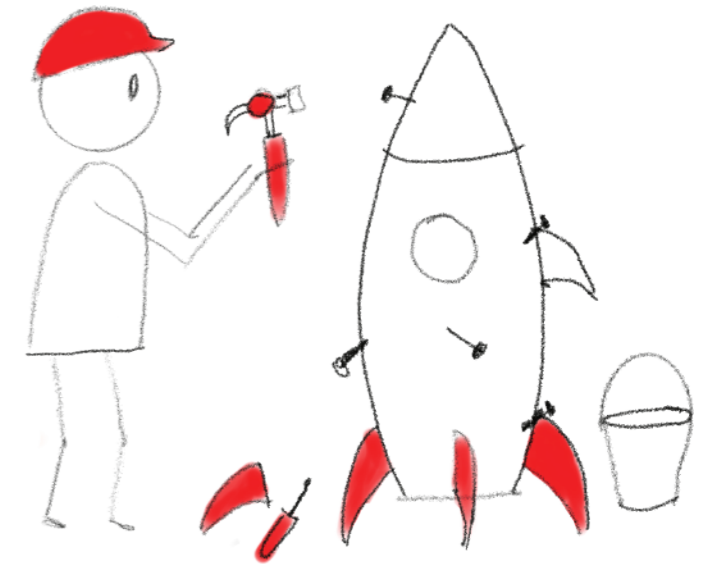
5.2.5. Module 5. Branding & Marketing

The heart of a company is its brand, and it is also the only thing that cannot be copied. Marketing is the way to communicate this brand and also translate it into sales of products or services. In this module, students will develop their company brand and marketing plan for their product/service launch.

The video for the first session of this module is about branding and naming. After the theory summary, the students will define their Brand DNA, by building a pyramid where, at the top, they will locate a representation or face of their customer, and in the other intersections they will identify the purpose of the brand, the personality of the brand, the positioning and their expected impact on the customer. To finalize this activity, the students will take a picture and will upload it to google drive.

As a second step, the students will create a name, a slogan, and a logo for their company writing and drawing them in their journals. After defining these basic brand elements, they will use the digital tool Canva for creating their digital logo and upload it to the google drive folder.

Their homework for the next session is to show their branding elements to their parents and get their perspectives and opinions on it, writing those in the journal.

For the second session of this module, the video is about Marketing strategies, digital marketing, and launching strategy. After the theory summary, the students will choose a social media platform to base their marketing strategy according to the profile of their company and their customers and create the account of the company on the selected social media uploading the previously created name, logo, and brand DNA.

For the second step, the students have to plan a launching strategy for their brand /product /service, for implement it on their social media and other channels they believe can be effective. After the launching strategy is clear, the students will create material for implementing it on their launching strategy on social media. For this aim, they can use Canva for images or Capcut for video.

The homework for the next session is to finish editing the material and publish it on the company's social media.

For the two sessions of this module, it is necessary to have at least one smartphone per group and have wifi for the whole classroom.
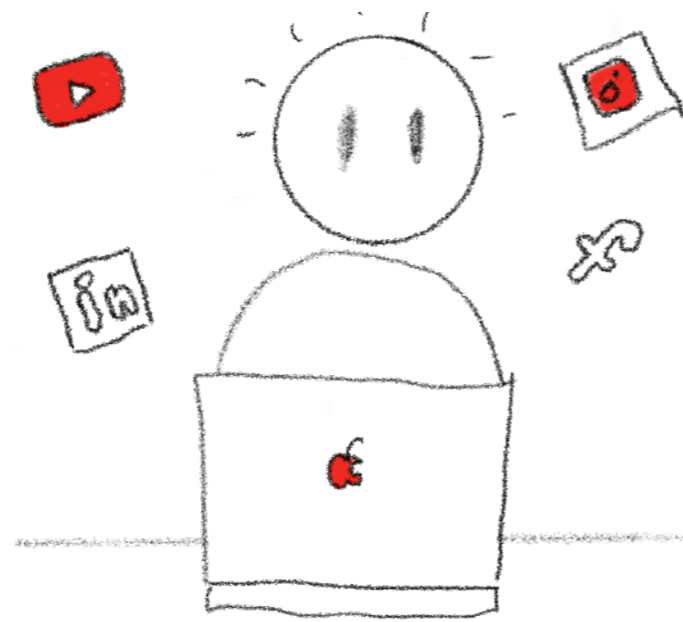
## 5.2.6. Module 5. Business model design

The business model is often the main element of innovation in a new company. This module seeks to generate business models that add value to the different actors in the value chain, which allows turning the business idea into a viable idea. The students will learn about types of business models, how to create a business model and how to generate value through the whole value chain of the company.

The video for the first session of this module is about value and value chain. After the theory summary, the students will build a bridge with popsicle sticks, tape, and hemp to map their value chain and the different actors included in it locating the different actors and processes along the bridge. Using the bridge, the students will identify inbound logistics, operations, outbound logistics, marketing and sales, and service. With this analogy, the students will learn how all the value chain is connected and generates value for different actors throughout the process, understanding the codependency that exists in the value chain. To finalize this session, the students will have to draw the value chain of their company on the workbook. For the second session of this module, the video is about what business models are, and the types of business models. After the theory summary, the students will draw two possible business models that can work for their company in their journal, selecting one of them to keep working.

To finalize this session, the students will use the chosen business model to develop it using a corkboard, cuts of representations of the actors, and the types of value, mapping their business model as if it was a movies crime investigation on the wall. In this representation, the students will map the actors, the interactions and the value exchanged among the different actors. The session will finish by taking pictures of the business model representation and uploading them to the google drive folder.

The homework for the next session is to research the possible prices for each one of the steps of their value chain, writing their findings in the journal.

For the two sessions of this module, it is necessary to have at least one smartphone per group and have wifi for the whole classroom.
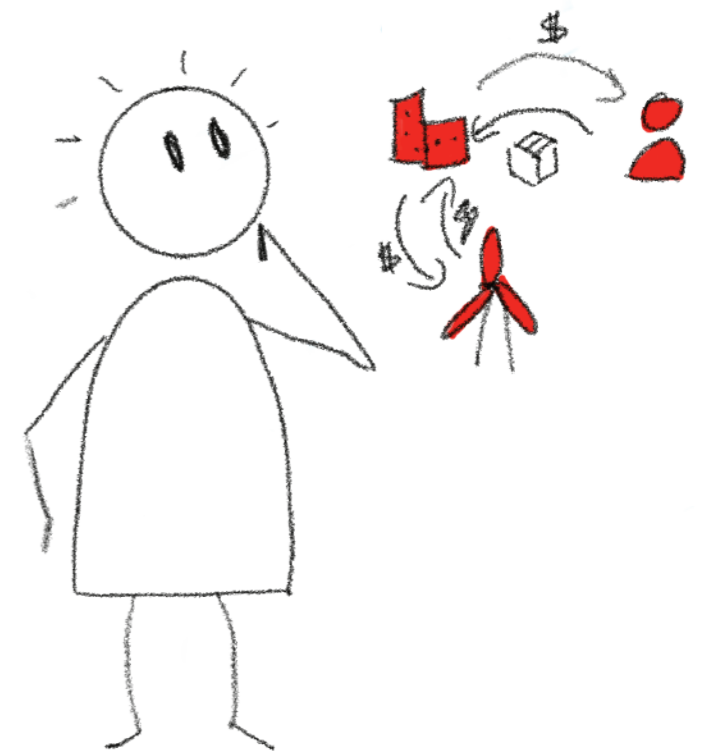
5.2.7. Module 7. New business finances

Having a basic knowledge of finance is key for any entrepreneur, and thus understand not only the viability of your business idea but also the resources necessary to make it a reality. In this module, students will understand the basic elements of the finances of a new company, in addition to making the first projection for the first year of their business.

The video for the first session of this module is about basic business finances, price, and product cycle. After the theory summary, the students need to identify the parts of their product or steps of the service plus the extra steps needed for commercializing it on the financial planning google sheets template (see this template in appendix #16: financial planning google sheets template).

For the second step, the students will set the price of their product/service, review their customer feedback, and acquire knowledge of the market. If they don't have a good estimation of this price, they will multiply the product cost by 2. To finalize this session, they will upload the google sheet with their company name to the google drive folder.

For the second session of this module, the video is about the sales process and break-even point. After the theory summary, the students will establish their fixed cost, with the guidance of the facilitators and the journal using the already created google sheets document.

Based on the fixed cost, product cost, and price, they will calculate their break-even point and will set the goal of the number of sales they think they can sell for the first year. Based on this, and with the help of the financial planning template, they will finalize the module by estimating their income and profit for the first year.

For the two sessions of this module, it is necessary to have at least one smartphone per group and have wifi for the whole classroom. If possible, access to computers is desirable for the two sessions of this module, so the students can make easier use of google sheets.

5.2.8. Module 8. Ideas communication

An idea is only as good as it can be communicated. In this last module, students will create their own elevator pitches and develop strategies and content to communicate their business idea to other interested stakeholders.

The video for the first session of this module is about idea communication and communication in public. After the theory summary, they will summarize their business plan making use of the business idea canvas on their journal based on the master canvas created by (Pavlič, V., n.d.).

As a second step, they will create their elevator pitch using the pitch generator template on their journal created by (Pavlič, V., n.d.), to finally write down their elevator pitch in their entrepreneurship journal. To finalize this session, the students will record their elevator pitch and upload it to the google drive folder.

For the second session of this module, the video is about how to do storytelling and storyboards. After the theory summary, the students will use their journals to create a sales story for their product/service. They will identify the key aspects of the company and the product to communicate to the customer, locate them on the storytelling mountain template created by (Pavlič, V., n.d.), and finally create a storyboard of their sales story.

To finalize the module, the students will create a sales video for publishing on their social media based on their storyboard. They will record and start editing it using Kapcut, with the final homework of finishing it and publishing it on their social media.

5.3. Program closure

To finalize the program, a Facebook live event will be hosted where the students from the different locations where the program took place will be able to pitch their idea and show their sales videos to the public, sharing knowledge from different contexts and creating a network of rural adolescents with an entrepreneurship mindset. Sharing not only their business idea, but also experiences, backgrounds, and dreams.
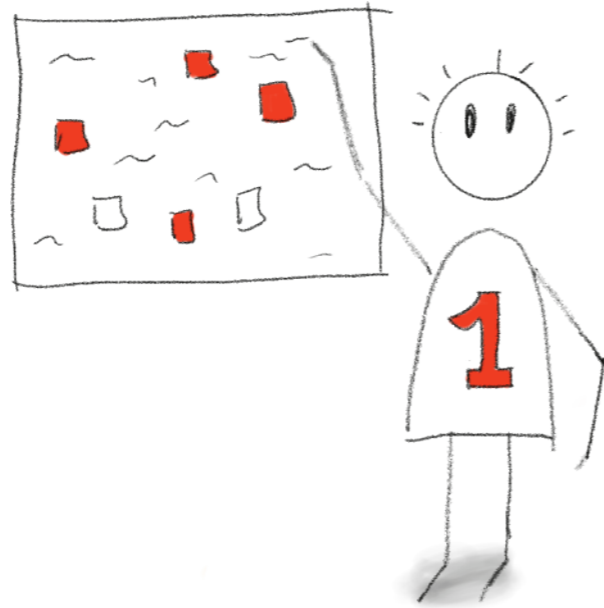

5.4. Training the facilitators

Training the facilitators is a crucial aspect of the success of the program. As was mentioned in the road mapping section, "Educating educators" is an important feature implemented in the second scenario, where facilitators, including teachers, will be educated to acquire an entrepreneurship mindset themselves. But this approach is not possible from the first scenario, where training the facilitators on how to facilitate the program mixed with a selection of the profile of the facilitators will ensure the correct delivery of the program to the students.

In this training, the facilitators will be taken through the program using online sessions, taking it as if they were students, rotating the lead facilitation among the participants. Through this process, they will receive training on the key moments of the program, the type of questions they have to make in the different stages to guide the students, and the different materials there are available for the different sessions.

In addition, there will be an initial moment where they will recognize their own story and how to use it to inspire the students and how to use different resources in different moments of the program for motivating and engaging them.

This training plan however is not included in the scope of this project, therefore, it needs to be developed and defined by the organization with the approach suggested in this report.

5.5. Following steps towards implementation

Towards the execution of the program, some extra activities have to be executed:

- As it was previously expressed, the facilitators' training methodology is not under the scope of this project, therefore, this training needs to be designed in order to ensure to correct execution of the program. One month before the program starts on the locations, the training has to start to ensure enough time for preparation and iteration in case it is needed.

- Alongside the facilitators' training development, the video lectures need to be produced. This graduation project, delivers to the organization the scripts for producing those videos, ensuring the correct approach derived from the executed research (see appendix #17: scripts for videos).

- For version 2022 of the "1,2,3 x TIC" program, it is suggested to execute in a maximum of three locations at a time, to ensure the control, administration, and the correct execution of the program.

- The goal of Más Por TIC is to execute the program in September, therefore, the selection and definition of in which schools the program is going to be executed must occur in the second half of the month of July, for later recruiting the facilitators in each location.

- Understanding the context and the adolescents of the class where the program is going to be executed before the program starts, was a relevant finding from the experiment. Therefore, an inscription form with enough questions in order to get knowledge about the participants is suggested to be developed and implemented as a mandatory step for participating in the program. This is also to ensure the parents of the participants are aware of the coming execution of the program, and the communication between parents and facilitators starts to generate trust and engagement in the community.

- The materials that are delivered in this graduation project have to be produced and assembled right after the location and the number of participants per location is known.

- As was already suggested, it is ideal to provide one smartphone per group during the sessions, ensuring these smartphones have the necessary applications that will be used during the program. It is suggested these smartphones are not given as a gift, but just as a borrowing material for exclusive usage during the program.

- Google Drive is the main digital tool proposed for the program, therefore the folders for each one of the modules in each one of the locations need to be created when the locations are confirmed. These Google Drive folders need to be sent vía WhatsApp on the first session to the students.

- Gathering extra resources of information for both students and facilitators was suggested as a part of the findings from the field experiment. It is suggested to create a library of extra resources and alocate them on a general google drive, available for consultation at any time by both the facilitators and the students.

6. Conclusion

This project was successful in starting to answer the general research question and the subquestions:

In terms of the first sub-question: How can Design be used for creating strategies for developing impactful rural youth entrepreneurial programs?, Strategic design and design research were good approaches for using design methodologies, for not only developing an impactful rural youth entrepreneurial program but also for creating a solid base where that program can be successful, impactful, meaningful and pertinent.

Empathizing with different actors was a fundamental design skill that allowed the proposition to mix all the desires, expectations, fears, and limitations of all different actors in the project. Not only a design approach but also entrepreneurship methodologies themselves were used for developing this project. Identifying opportunities, creating propositions and prototypes of the proposition, understanding the risky assumptions, testing them with an MVP, and iterating it based on the learnings.

This shows that the design mindset and entrepreneurial mindset can actually be used as an approach to multiple varieties of projects of social impact and entrepreneurship, in addition to the already known fields where design thinking and design mindset are used.

It is then suggested by the learnings of this project that the design process and design skills, can be implemented for the development of an impactful rural youth entrepreneurial program. The design process is after all an approach to be taken, but an approach that showed to be successful for this specific aim.

In terms of the second sub-question: What are the best methodologies for empowering rural youth with entrepreneurship? it is still a broad question that could be refined since it depends on the specific context and dynamics that happen between people and the different actors in the context. However, it was found both through literature and practice that gamified experiences applied to project-based learning, in addition to a strong emphasis on group work were highly effective to empower rural youth. This was especially evident after the pilot test, where the students were asked if they now considered they could start their own business and more than 90% raised their hands. Also in contradiction to what was found in the literature (Planning national department., 2020), girls were more empowered and showed more willingness to do the activities, which shows the potential of using these kinds of approaches to reduce the gender gap when it comes to entrepreneurial self-awareness, allowing them to recognize on themselves entrepreneurial skills.

The third subquestion: What are the most effective channels for empowering the rural youth with entrepreneurship? Also appears to be a broad and not answerable question. Which would require a re-definition of the question. It is suggested that instead of channels the right question should be the right tools. It was clear from this project, that a classroom approach is needed for these kinds of specific scenarios, mainly due to the lack of time after school hours that students in rural areas have to dedicate to studies. It is then suggested, that the most important activities of any education program for the rural youth need to happen during the sessions, and these sessions are to happen within school hours.

Being these sub-questions addressed, we can now try to answer the general research question: How to successfully use design and entrepreneurship for young people in rural developing contexts to reduce inequality and poorness?. This question can be only partially answered as a result of this project. Entrepreneurship shows the potential to reduce inequality in rural areas since it empowers and provides new opportunities for rural youth. Not only to start their own businesses but also to generate networks between the community that allows the creation of systems of people, that are able to create richness and value from the community to the community, and outside the community, taking advantage of the potentials and specific characteristics of the different contexts.

However, entrepreneurship is just one possible tool to start to reduce this inequality and poorness, which needs to be complemented with many other solutions and more systemic interventions. Educating rural youth in entrepreneurship provides them with new perspectives and opportunities, but as it has been stated in this document, not everyone is to be an entrepreneur, and also entrepreneurship needs to have an environment with enough support and economic dynamics to sustain its growth and viability. Otherwise, it can become a reason for frustration and reduce the self-perception in terms of capabilities towards creating and innovating.

From this research, it can be stated that entrepreneurship education in youth is a potential tool for reducing poorness and inequality, but it requires time and long-term perspective, together with other systemic interventions in the different contexts to support the emergence of entrepreneurs and innovators in these rural contexts.

6.1. Limitations

It was not possible to test the whole final program: Despite a meaningful test being executed for the initial 5 sessions of the program, the full program could not be tested due to time and resources. Hence, the next iteration of the program will work both as a version of the program 1,2,3 x TIC and as a pilot to keep learning and iterating on the strategic realm, the structure, tools, and methods of the program. This entails that there is a high possibility that some aspects of the program go wrong.

Most of the project was executed in The Netherlands: Despite this was not a big barrier thanks to technology, in the initial stage of the research it was not possible to speak with many people who belonged to the context, this was balanced with the execution of the experiment, which was not only an opportunity to test the program proposition but also to involve and understand with the community, their way of living, desires, obstacles, and fears.

Lack of experience in education: This project has a strong emphasis on education, however, the author has no a relevant experience in childhood education, which was reflected in biases and assumptions that were evident, especially in the field experiment. This is balanced with the inclusion of the teachers as part of the program. However, this lack of knowledge in education can result in holes in the proposal for the full success of the program.

Scalability: Despite the research conducted for this research included stakeholders and actors from different regions, the field experiment was only conducted in two regions. This could result that not everything that is suggested in the proposal is applicable to all regions in Colombia, therefore, possible changes will emerge when the program scales up to multiple locations and regions of the country.

6.2. Personal reflection

About my expectations:
I chose to do this project because of a personal desire to help my country and retribute the world to some extent all the opportunities that it has given to me. Therefore I wanted to see my project have a real impact on the people that I was working with. But I wanted to feel this impact, and not just measure it with numbers. In addition, I had clear that I wanted to work in entrepreneurship and mix it with the design field and understand how could I use these two fields to help people.

About my experience and feelings:
Throughout the project, I was able to share experiences and knowledge with a wide range of different and interesting people from different contexts. This allowed me to understand different points of view, experiences, and desires that deeply fed the content of this project. But not everything was only about the project. This experience also allowed me to rediscover my own country from a completely different perspective, empathizing with the people outside of my bubble and my usual context, showing me different ways of living and perceiving the same context, but maybe from a completely different way of living and interacting with it. For me, it was deeply motivating to see how my work was impacting people on different levels. I realized that our presence ignited curiosity from children and other people, for our stories, our skills, and even our own curiosity about them and their way of living. A highly rewarding moment was when we were saying goodbye to the children we were working with, and they said they did not want us to leave yet, that we should stay longer. This, in addition to the purely academic and research perspective motivated me and showed me that when you want you can really change people's lifes and they change yours in that same process.

About my personal decisions thanks to the process:
As an international student, an important decision to make towards the end of my studies was whether to stay in The Netherlands or go back to my country to what is coming next in my career. This project highly influenced my decision, since it was in a way an experiment for me to see how I liked my country after being abroad, and align that with my personal desires for the next steps of my career. As I already mentioned, this project allowed me to rediscover my own country, and finding multiple opportunities and things to do, and make use of my newly acquired knowledge to make my country a better place to live, involving all those amazing and talented people that live in there to create, innovate, and improve. This can be summarized in my decision to go back to Colombia and try to make a better place for myself and my people.

Figures

Appendixes

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Using design and entrepreneurship
for inequality reduction in Colombia

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