

EPISODE 380**[INTRODUCTION]**

[0:00:01.5] JM: Access to education is something everyone strives for but not all achieved, especially education that leads to meaningful and well-paying work. In today's world where software is eating all sorts of industries, access to a good technical education is still out of the reach of many people.

Laboratoria is a social enterprise which teaches women from a low income backgrounds in Peru, Mexico and Chile how to code and helps place them in coding jobs. It was started in Peru by couple Mariana Acosta, who is the CEO, and Herman Marin, who is the CTO along with a friend after they found it difficult to hire developers for a web agency that they had started.

In today's episode, Mariana talks to Carl Mungazi about how Laboratoria is using software engineering to change the lives of the women in Latin America whilst also meeting a demand for good technical talent. She discusses the challenges faced by her students who sometimes spend hours travelling to the school and her plans for training 10,000 developers over the next five years.

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[0:01:21.0] JM: As applications become more distributed and sophisticated, managing and maintaining them becomes more challenging. Running one of the world's largest Paz platforms, Heroku understands the value of operations and the opportunity cost of developer time. Listen to the live podcast with Heroku engineering on February 28th to learn about Heroku's metrics platform architecture and how it laid the foundation for auto scaling.

We'll talk about the importance of maintaining application health and best practices for monitoring application user experience. I love Heroku both as a user and because they are a sponsor of Software Engineering Daily, but I want to emphasize that I do use Heroku in my own projects. I really am a fan and I'm looking forward to doing some continued episodes about Heroku.

[INTERVIEW]

[0:02:21.0] CM: Mariana, you are the CEO of Laboratoria. Welcome to SE Daily.

[0:02:25.7] MA: Thank you very much for the invitation.

[0:02:28.6] CM: I think as a starting point, can you just give us a brief background as to what Laboratoria does and what it is.

[0:02:36.1] MA: Yes, we are a social enterprise that trains young women from low income backgrounds to become awesome software developers, and then we connect them with employment opportunities in the tech sectors. We basically are focused in Latin America right now. We have four training centers and we're opening a fifth one this year across the region.

[0:02:55.2] CM: Your websites states that you look for talent where no one else is looking. Which areas in Peru, Chile, and Mexico are people not looking for programmers who are talented?

[0:03:08.1] MA: Yeah, unfortunately it's not only a matter of areas. It's often a matter of socioeconomic income and background. What happens in Latin America is that we have these large number of youth that cannot afford quality higher education, and hence often end up doing just low skilled work, or the case of women, it's often just domestic work.

We thought the opportunity of even discovering their talent and potential. That's our niche. We're focusing in young women who haven't been able to afford quality higher education and have a lot of potential, but really haven't had the opportunity to discover that and do something with it.

[0:03:55.5] CM: Okay. Before you existed and your company existed, how a women from low income backgrounds able to learn how to code, if at all?

[0:04:05.6] MA: Man! It's actually tough. I think before we existed, there's often women that go on to study computer and informatics, it's usually called, but it tends to happen that's in places of relatively poor quality. We actually have many students that have been through some sort of education in a technical context, but they really didn't learn the things that they needed to then be able to work. I think that's a major change. It's actually giving them the skills that they need to become employable and to be able to add value in a company on the one side

On the other side, I think there's also an issue of the branding of what it means to be a programmer, and in Latin America, that recently that definitely meant being a guy, and a particular type of guy too. I think we're really trying to change that and show that software development is an awesome career for women too with less opportunities.

[0:05:12.6] CM: Okay. Since you started, how many has the course had now?

[0:05:16.1] MA: We've graduated over 450 developers and we currently have 200 of them on training.

[0:05:24.5] CM: In May this year, you partnered with Google as part of International Women's day, and you did a study of the tech labor market, and what things that you find in your study?

[0:05:36.4] MA: Yeah. We partnered with Google on a very exciting project to grow Laboratoria but also to diversify the career tracks that we offer. Right now, we offer frontend web development. With Google, we want to go beyond that and start taking other things. This market study was part of getting to understand where should we focus. There's a bunch of different tracks that we could follow within the world of software development, and it was actually pretty useful.

I think that the first thing that's very clear is that there's massive demand. This is a market that's growing fast. Software developer will become the fastest growing career in the next decade. There's already a very significant gap, almost half a million people in IT overall by next year in Latin America. It's a very significant gap, and the region needs this type of talent to be able to grow its digital economy and really transition towards knowledge economics. That was one key thing, so I think we are currently in a very sweet spot.

Then we also had information about what the companies want and realize that many of the areas that we're pursuing already fit with that. For example, UX design, it's a career that has significant demand, backend development. I think mobile development is also coming and starting to grow in the region, and so on.

[0:07:06.4] CM: Since you started and the work you've done, how has the landscape changed for women entering tech as a result of your work?

[0:07:15.8] MA: I actually feel very proud. I think it has changed significantly. I started these because a few years ago I actually started a software company first and it was very hard to recruit software developers for my own theme and it was almost impossible to recruit women. It became the typical theme of all guys. I would take part in different events and conferences and meet ups and often there was no more than one or two women there. Today, in the cities where are playing a role, I think that's starting to change gradually. Every meet up that you'll go, every hackathon that you'll go, you will often get a graduates or students from Laboratoria and they're already making an impact there.

More important, they're really becoming these inspiration for so many more women and we recently see that we have more and more applicants to our program who now actually dream of becoming developers. They're read the stories. They've met our graduates and they see that they're doing really great and that they're taking advantage of all of the opportunities in the sector and now truly believe that they can actually also have a career and become part of the leadership of the tech industry.

[0:08:33.5] CM: On that point, I read that your first ever call for full-time applicants received over 2,500 applications. How did you choose your first cohorts?

[0:08:45.2] MA: The number of applicants has grown cohort by cohort. In the most recent ones, it's usually where we get the most applicants, but that continuous increase has been crucial to be able to develop a selection process that enables us to identify potential over prior experience. We don't require any sort of experience in tech per se, but we do look for things that can suggest that these candidates will be become developers and eventually transition to jobs

in the sector. I think that there's two sides to that. There's, on the one side, a certain cognitive skills that are important logic and math, basically because we're teaching programming, so that's an important base to have.

Then on the other hand, maybe even more important are the soft skills and the life skills. We look for things like perseverance, and resilience, and commitment, and certain level of emotional maturity that show us that these are women that can actually persevere and stick to the end given that it's not an easy task at all.

[0:09:57.7] CM: What does the profile of a typical student look like at Laboratoria?

[0:10:06.9] MA: Yeah, our typical student is, say, a 24-year-old girl who basically graduated high school, maybe spent a year trying to figuring out what to do, helping at home. Then went on to try to start some sort of higher location, but after a year have to drop out because there was some sort of economy difficulty in the family, like a parent losing a job, or illness. Then went on to work in the hopes of saving money to be able to go back to school.

It's really diverse. We have a bunch of students that have worked in super markets, or in call centers, or in these more like mom & pop shops, informal shops related to a family business. I think that the common denominator is that they are eagerly looking for an opportunity to build better lives not only for themselves, but also for their communities and they have the drive and the talent, really, to as soon as they're given an opportunity, take advantage of it to really grow.

[0:11:15.0] CM: Yeah. One thing that really impressed me and kind of — When I was reading about Laboratoria was that the kind of things your students have to do to get to where they were. For example, on your website, you state that the adversity faced by your students makes them more stronger and more committed. In that context, how does overcoming adversity translates into success and learning how to program?

[0:11:43.9] MA: Yeah. That is very humbling. I think that when you get to know the story of our students and all they do to really take the most of advantage of their time with us, it's pretty amazing. Just to begin with, the commute is endless. In a city like Lima that has very poor public transportations, someone that lives in the outskirts takes 2-1/2 hours each way. You're talking

about a long time, not in a nice subway. They're changing four different types of public transportation, each one worse than the previous one. It's not easy.

Many of them also deal with personal circumstances that are challenging. It's really inspiring to see the strength that they bring and how Laboratoria is a place where they also — We push them to believe in themselves and to be certain that despite that they haven't had the opportunity, they have everything they need to get to wherever they want, and coding is the skill that will get them there. Once they realize that, I think that — Man! They're ready to go.

One great thing about, actually, teaching code, and I'm not teaching something else, is that learning to program, it's a very empowering skill. Really, soon, after they start, they're able to build something and show that to the world. Something that look like complete Chinese before starting. This itself, I think it really becomes empowering for them to engage and to continue growing.

[0:13:20.4] CM: I think you can kind of sort of spoke about it then, but I get that the sense that you have a really strong pastoral emphasis built into a curriculum. For example, you teach your students how to handle their finances, how to handle being in work. You also provide psychologists. Why do you do all these things as well as teaching them how to code?

[0:13:45.3] MA: Yeah, we do all these things because these are the most important things in the end to be able to not only gain, but sustain a job at a demanding place and to basically escape poverty and build a better life. I think these soft part, this is the most important one in the end. Our students, many of them haven't worked in the formal sector. None of them has worked in tech, so that transition from before Laboratoria and what they were doing then to their first job, it's a pretty hard one.

We need to make sure that we equip them not only with the technical skills, but also with all these other life skills that are crucial for them to be able to say, "You know what? I can do it. I can deal with this transition. I've learned how to communicate. I've learned how to manage change, how to adopt, how to take care of these new resources that I'm having, how to think long-term." It's honestly the most challenging part too. I think it's way easier to pick someone how to code than to build all these other skills that are around it.

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[INTERVIEW CONTINUED]

[0:16:26.0] CM: What kind of things have you come across, which were a particular challenge to you in terms of maybe your students came to you and they had some past issues that maybe affected how they're able to learn how to code?

[0:16:38.5] MA: Yeah. I think of the most important challenges, and I think it's one of the things that we've learned to do really well. It's one of the things that I'm most proud of, is building these confidence, because it often happens that our students have been through, yeah, difficult circumstances and had one, two, three and more doors closed upon them because of lack of opportunity. They get to a point where no longer feel think it's possible. They often share their stories and say that when they applied, someone have to push them and they didn't think they would make it. They then realize that they're perfectly capable, they're bright, but that's, I think,

a number one thing that they need to overcome to become developers. We really work a lot around that. I think we have a good approach. If you talk to them the first day of classes and you talk to them graduation day or maybe a few months after they're working, in many ways they've grown — It's very impressive. I think they are very surprised about the change that they undergo.

[0:17:47.4] CM: Is this work that you do partly why you also try and involve the parents and the family into the actual education process as well?

[0:17:57.1] MA: Yeah. That's a huge learning that we had early on, because parents and families can often be the factor that drags them down and we realized that we were doing all of these. It's a huge change in how they see life. If it was only us pushing for that and that the family was pushing the other way, they were going to be torn and it was going to be difficult. It was one of the reasons for dropout rates and so on. Now, we tried to engage the family along the way. I think it's very helpful so that they understand the type of commitment that the programming fails, and they commit to support them. If they don't have family support, it's going to be very hard for them to stick to the program.

In societies like the ones we have in Latin America, where family is such an important part of life. It's not a personal decision in the end. It has been a family decision, and I often see and I really want to measure this because this is more like my experience, but I would really want to try and see if there's a correlation. Strong students often have someone in their family that believes in them too. They have a mother that's there saying, "You know what? This is your opportunity. Go for it. I'll take care of the house. You focus in this," or they have a sister or they have someone that's cheering for them to stick to the program and get all the way till the end.

[0:19:17.4] CM: Once the students are set hold ready to start learning, what kind of topics are on your curriculum and what are they learning and how do you decide what to teach them?

[0:19:27.9] MA: Yeah. Our core curriculum is in JavaScript. They basically graduate as a frontend JavaScript developers, and I think it's a programming language that we chose basically because there's a lot of demand for it. We do try to teach them just programming logic overall so that they can actually then go out and be able to learn other stuff and if they go out to a job

where JavaScript is not the main language used, they have the ability to learn other things and adopt. That's, I think, an important part. All the course runs through JavaScript. Of course, they also see HTML, CSS, and responsive design and things like that that complement that skillset.

[0:20:13.8] CM: How are you — Sorry.

[0:20:16.0] MA: I was just saying in terms of deciding, we have a really close relationship with companies, with the market. Companies of all sizes and colors interested in hiring developers and we coordinate with them a lot and we invite them to our events and we sent out our curriculum for review. We really try and make sure that it's very closely related to what the market needs.

[0:20:39.1] CM: How are you assessing the success of your methods? How are you able to gauge whether or not you may have to tweak something or change a topic to suit students and to help them learn more and become more employable?

[0:20:52.9] MA: Yeah, this is a very important question. I think it's one of the things that we've tried to stress as an organization. First, in the classroom, we have a very short feedback loop. We teach through a methodology. There's learning sprints that are usually two weeks long. After a learning sprint, there's a retrospective where students reflect about their learning process, what they could do better, the best practices. Teachers and team also reflect on the content based on how students did and their feedback, what can we do better? What's one element that takes place constantly.

Then, the other crucial part of it is our success rates. We basically, at the end of every boot camp, we provide students with our recommendation for employment. For these, we have certain levels that they need to attain. We strive to give at least 90% of the class our recommendation for employment. That means they're ready to work. That's an important metric for us.

Then we go on and try to connect those students with employment opportunities and we measure what percentage of them actually got a job and that's another crucial metric, because in the end if they managed to get a job that shows that they were able to learn the skill.

Then as a third level, we measure how they sustain that job and growing that job which shows you that they don't only manage to get a one-time gig, but they've become employable and are on track for a career in the sector.

[0:22:24.0] CM: Okay. On that point of being employable, when you first had your first batch of students who graduated and you went to companies and say, "We have these students who are developers. We've taught them." What was the response like from industry when you had that first batch of students ready to enter their markets?

[0:22:43.8] MA: Yeah, those were pretty crazy times. I think that there was a lot of surprise for what we were doing. It was pretty innovative at the time and companies, agencies, starters were like, "Wow! This is cool. These young girls, they're developers, they come from a different background than the rest of my team maybe comes. I think there was a lot of openness at a first level and that was great. People connected with our brand and they love the idea.

Then once we went and actually tried to place students, I think we had our early adopters that were people that said, "I love this. I don't mind that they're still very junior." Back then, the level was always way less advance that it is today. We're like, "I don't mind. I love this." There was also people that were way more cautious, like, "How do I know that they're good developers if they don't have their degree," and so on.

Our focus has been shown through a lot of data, their level, and to be able to be as transparent as we can with companies and we're even moving into a space of trying to compare graduates with graduates from other places to show their technical level is very competitive.

[0:23:57.9] CM: On that point about comparisons, are there any differences between how Laboratoria is teaching coding and how it is taught in the schools where you operate, because you operate in Peru, Chile and Mexico. What are the differences in terms of what you teach and what has been taught in schools there?

[0:24:18.6] MA: Yes. I think there are many differences. First, if we compare Laboratoria with other, the most common alternative, which is still a technical institute. It's not yet a boot camp, because boot camps are not that widespread yet in Latin America. If you compare it with a

technical institute, it often happens that their curriculum tends to be outdated. They lack the speed to be able to change as fast as we do. I think that's one key element.

Then if you go and compare what and how we teach with other boot camps, I think that in the how, there's probably not much difference — Sorry, in the why. In the how, there's a wide difference. I think we've developed a teaching methodology and we focus not only in what, but, really, how do we make sure that these students are learning something that's complex in a limited amount of time. We've developed the agile classroom methodology that came out actually of our reflection on how to teach them agile culture and then we said, "Why don't we actually make the whole classroom agile?" I think that the way that works is amazing for student engagement. They're like super, super engaged and that is able to drive learning forward.

I think the other thing that makes Laboratoria really special, and if you go to any of our training centers, it will be very evident is that we have groups of 60 women together, eight hours a day, five days a week, and that builds just such a strong community that I think it's a game changer.

[0:25:57.0] CM: How key is that community in how the women are developing their skills and importing networks for future opportunities and whatever really in the future for them?

[0:26:08.7] MA: It's crucial. I think it's one of the most important things that community gives them a sense of belonging, gives them a sense of purpose, gives them support when they're down, not only morally but also technically, they complement each other and they're on this boat together for the long run. I think that's just such a strong element of keeping them there, keeping them together.

As we have more alumni, that's going to become incredibly powerful. We want to train over 10,000 developers in the next couple of years. That's going to mean hiring a network of developers across Latin America, probably even across the U.S. or elsewhere that share that same Laboratoria heart, like the very strong movement that they belong to.

[0:26:56.1] CM: I was actually in fact going to come to that point of your ambitions for the future because I read an article in Bloomberg which said that the money you see from the entire American development bank was around \$900,000 last year, or 2015, and that was for training

10,000 coders in the next five years. How are you going to go about doing that, because that's a big number to train and what kind of things are you going to put in place to ensure that you hit that target?

[0:27:28.4] MA: Yeah. Just to clarify, the grant from the IDB goes to a little part of that, but that obviously ambitious has many, many more partners. How are we going to do that? Basically, I think number one, we are actually building the organizational structure to be able to support that growth. We have a central product team that is in charge and focused on building the best products, the best curriculum. They can start by tailoring it for our needs. The best technology platforms, the best programs overall and that we have a smooth structure to be able to deploy that to all our training centers in a way that actually makes sense for them and that enables them to really attain their goals.

Then, I think we have a pretty strong network of industry, organizations working in these sectors, social sector organizations. Even government, that's a strong pull for us. Pushing us to really continue growing Laboratoria and be able to leverage on that local network. That's another key thing.

We're also working on building the best team. I think that the best team is a crucial part of actually being able to accomplish these vision that I think that it's doable, but of course it's very ambitious.

[0:28:52.1] CM: I also understand that as part of the drive to increase your numbers of students, you are looking using things like bended learning in your approach in the classroom. Now, how does that work in the context of what you're doing?

[0:29:05.2] MA: Yeah, I think that's pretty important. One of our key goals is to just go from teaching tech to actually becoming ourselves, a tech company that leverages on technology to enhance our operations on our scale. We're already doing, working to get actually a bunch of our lessons in video. That doesn't mean that the students won't be together physically. I think that's a very important element to achieve all the live skills part that we bring about, but we really want to build a technology to enable them to learn at their own pace, at their own needs to be able to diversity our curriculum, and technology is crucial for that. With our scaled plans, I

think tech is also a key element to ensure consistency. We need the processes, but we also need the technology to facilitate that consistency and ensure that we can be sure that a developer from Buenos Aires has the same level than a developer from Guatemala and that there is consistency across.

[0:30:10.9] CM: Once the students have finished the course, and you kind of spoke to this earlier, what happens to them? Are you able to provide a path where they do an internship or are you able to employee them in-house for your agency work? What kind of options are there for them to take?

[0:30:29.4] MA: We basically place them in jobs. We have our very wide network of hiring companies and a whole team that's focused in placing our students in the best jobs possible. We now have students working in top tier companies like IBM, and ThoughtWorks, and [inaudible 0:30:47.9] and so on to the coolest startups, to even government and large companies. Our entire focusing is placing them in the best jobs possible. We've been, I think, quite successful until now. There's obviously room for improvement, but I think we've done well.

As I was saying at the beginning, on average, on our latest cohorts, nearly 80% of them go on to work as developers full-time and they triple their income as a consequence.

[0:31:19.0] CM: On that point of financing, I've got a couple of things I want to talk to you about on that. The first one, really, is the kind of model you have. How are you able to raise the money you need to keep teaching these women and goes to code and also, I guess, pay yourselves, because I would imagine that you need to also earn some money on the side to keep yourself going as well as training the students you have?

[0:31:43.0] MA: Yeah, of course. We are 60 people working at Laboratoria and everyone has — is paid as a full-time employee and we try to pay competitive because we need great talent. To begin with, we have our own means of generating revenue and that's important because we do aspire to become a self-sustainable organization in the medium realm. Our students payback the program once they graduate and get a job. The student that follows the path that we like them to follow, that actually becomes employable, gets the job and grows in the job will actually end up paying even more than what it costs us to train her.

We are also charging companies. For companies to hire our talent, they take part in a series of events that we organize and they pay for that to be able to access the pool of talent with certain priority. That's key. Then until we reach our breakeven, if you want to, we have partnerships with the organizations that support our work because they believe in our cause and our mission and that's why we partner with the IDB or with Google.org or investors like CoMedia Network that really think that the moral that Laboratoria brings in about is going to change how we prepare a youth from low income backgrounds for the jobs of the future.

[0:33:09.9] CM: Also, on that, in terms of sources of revenue, are you looking at maybe expanding your teaching to general public or are you, for now, just focused on teaching women how to code mainly before you may be look at expanding your services?

[0:33:24.0] MA: We've thought about that. For now, we want to continue focusing on our core. I think that's one of our strong value propositions. It's women. It's giving them a career in tech. It's giving them that job to actually kick-start that career. It's pretty unique, I think. Obviously, there's a massive opportunity out there and we reflect about if it's worth going out after it.

One thing that we have started doing is that we're also providing training to a different public, but it's through companies that want to hire talents. We do provide training for hiring companies that want to hire talent, but also want to train their staff in the types of things that we know. That's an interesting line of revenue that I think we'll continue to grow. Yeah, we need to take it step-by-step, I think. The most important thing for us is that we are able to preserve our social mission.

[0:34:23.0] CM: I guess with that work that you're doing, you have a unique insight into recruitment for tech in Latin America. When you started, you had an issue hiring developers yourself in Peru. Now, has that changed now? Is it now easier to hire developers if you have an idea or a [inaudible 0:34:43.5] or is it too quite hard to find the right talent for the job that you have?

[0:34:49.3] MA: I think there is still a lot of unmet demand, in part, that's the opportunity that we pursue. There's large unmet demand. That demand is also quite varied. I think we are solving a

pain when it comes to junior frontend developers. We definitely are, because we're graduating over a 120 developers per city every year. You get to access that pool of talent at once, so it's very convenient. We're just solving one niche right now. Demand for backend developers, it's still soaring and it's hard to find demand for mobile developers, demand for people doing UX design or architecture, so on. I think, overall, it's still pretty challenging. That's an opportunity for us. We need to grow to not only scale what we do right now, but also to tap on to those needs.

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[0:35:52.5] JM: VividCortex is the best way to improve your database performance, efficiency, and uptime. It's a cloud-hosted monitoring platform that eliminates your most critical visibility gap, providing insights at 1-second granularity into production database workload and query performance. It measures the execution and resource consumption of every statement and transaction, so you can proactively fix future database issues before they impact customers.

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[INTERVIEW CONTINUED]

[0:36:55.9] CM: Are there any other startups maybe like yourselves or different to yourselves, are trying to also tackle that same issue at Latin America?

[0:37:05.0] MA: I think there are. There are and there will probably be more and more, but not in exactly the same way. You are starting to see more boot camps in Latin America. Often, they don't attend the party that we attend. They target the higher income population that just wants a career change. You do get more and more things like that. I think that our approach is to be the best in preparing people to actually land these jobs in tech but do so with a social mission. Not only bringing in the talent that the sector needs, but making this an opportunity for social transformation in Latin America.

[0:37:46.5] CM: Okay. Obviously, you are able to get these young women to come to your school and to learn. What happens to students who are not able to make the cuts? Do you offer any other options for them or are they just kind of left having to try again next year to get into the school?

[0:38:06.3] MA: We guide them to some other options, but we basically provide the information. It's not a tailored program to take them somewhere else because we don't have that capacity to do that, but we do guide them with references to other programs that do similar things to what we do but in different types of sectors, for example, in maybe in digitation or other things. We usually also guide them to resources when they can start learning to code online so that they can continue engaged and hopefully apply again.

[0:38:41.1] CM: With that, how many of your students are able to take their work home and maybe code at home or do more work at home. Is that something that they can do very easily?

[0:38:52.2] MA: It depends. I would say easily probably around half who actually has a computer, an internet, or has someone nearby that has a computer and an internet, but this is in fact one of the reasons why the program is full-time and we'd try to give them the facilities to stay as long as they want actually and that's happened. Many of them end up staying up very late because they want to practice and they can do it at home.

[0:39:18.0] CM: I now want to go on to an exciting thing that happened to you last year. You shared a platform with President Barack Obama, then president, and mark Zuckerberg at the Global Entrepreneurship Summit and you were talking about how you started Laboratoria and discussing what you've found and what you've done. One thing you spoke about was that when you started, being connected to the internet was a challenge for you. Can you expand on this and kind of tell us how it was a challenge and what you did to overcome that challenge?

[0:39:54.0] MA: Sorry. Being connected to the internet you said?

[0:39:57.1] CM: Yeah. Being able to be connected to the internet for you was a challenge in the beginning in terms of general connectivity in the region.

[0:40:08.7] MA: Oh, okay. Man! I would have to go back and listen to that again, because — Connectivity. I don't know if it — There's always the connectivity is not as great everywhere, but it's pretty widespread particularly in urban centers, in Latin America. It is very very widespread. It's also sometimes often very slow, but it is there and that's actually a thing that helps the type of work that we do.

Obviously, there are limitations and we were reflecting about this very recently and say many of our students have a smartphone and they spent five hours a day commuting. You would think that they could do a bunch of stuff on their smartphone, maybe download an app to practice, or I don't know — Watch YouTube videos. In the end, that doesn't happen because they don't have any credit to actually use the internet when they're not on Wi-Fi, and the smartphones are usually very poor quality, so they don't have a lot of memory. That represents certain limitations that elsewhere wouldn't be there.

[0:41:20.0] CM: I guess, actually, on that point, that actually is maybe a chance for someone to develop a solution which can maybe work in that context.

[0:41:30.4] MA: Totally. We are thinking about it already. How can we develop content that's accessible offline and that doesn't take that much space and that how can we take advantage of those five hours a day commute thing so that they can learn, a podcast. Obviously, we also need to think about resources in Spanish because many of the things are available in English but not in Spanish. That's another challenge for us, which is also an opportunity.

[0:41:58.3] CM: What would you say from your experience are the challenges of scaling a tech company like yours across Latin America? What kind of things did you come across which may be slowed you down and may be you weren't able to go as fast as you wanted to be?

[0:42:16.6] MA: Yeah, it's very challenging. It's, for sure, one of the most challenging things I've done and I'm still in the midst of it. I think there are many elements. First, you need to build a great product. That's the number one. In our case, that means building the best training program for junior developers out there and how do we make sure that we have the best curriculum and the best teaching methodology and the best applicants to be able to learn this and we have the

correct selection process and so on. Basically, a product that our clients, which are our students and our hiring companies love. That's continuous improvement that we're doing.

Scaling up, there's also certain or limitations in terms of organizational capacity. We've grown fast, but we also need to be cautious to go in the right way, and that also leads to funding. In the end, we are a program that uses a lot of tech but has a physical element to it. That's scalability is a bit more challenging because as we go to new centers, we need new people to run those. We are making to make that as efficient as it can be, but we will always need new people. We also need the funding for that.

Again, I think it is challenging but it's also an amazing opportunity to pursue, and that's a good thing. Our market, it's — In terms of young women from low income backgrounds looking for a better opportunity, it's endless. In terms of job opportunities in tech, it's very very large. I think the pieces are there to make it happen.

[0:43:59.8] CM: How are you able to maintain the essence of what Laboratoria is whilst you're scaling up across all these countries in Latin America?

[0:44:09.0] MA: yeah, that's a good question, and I think that's key. I wouldn't want to scale if we're going to lose that, and that's going to change as we become bigger, but I think that there are certain things that characterize our program and the people that work here. I actually spend a significant amount of my time thinking about that and doing things to promote our culture and to make sure that people are aligned and to make sure that people from the different training centers are working together and actually feel part of the same organization. We have a set of principles and our values that characterized who we are. I think that's helping a lot, but it's a continuous challenge and the bigger we become, probably the more time we'll have to invest to make sure that we protect that.

[0:44:57.7] CM: Would you say then that's the differences you faced in running a tech company in Peru, in Chile and Mexico, and what would those differences be?

[0:45:10.0] MA: There are certain differences, for sure, but I think there are definitely way more similarities and it's very surprising to see how similar demand for tech talent is and how similar

are the challenges that our students face and so on. Overwhelmingly, I think they're way more similar and that's a great advantage of Latin America. You know it's a short language, it's a very similar culture. That's why we really have the vision of this regional program.

In terms of difference, there are obviously some things, like what does it mean to be a young girl from low income background in Santiago is different to what that means in Arequipa, for example. It's quite different. We do make some adjustments. Overall, I think it's been interesting to see how surprisingly similar things are.

[0:46:04.8] CM: As you've scaled it up, what have you seen in terms of how healthy the tech ecosystem is in Peru, in Chile, and in Mexico?

[0:46:15.3] MA: I think in all of these places, it's growing, but it's definitely growing faster in some more than other, like from the places we operate. In Mexico, for sure, takes a lead. It's a much bigger economy. It has a much bigger presence of venture capital. It's definitely way more advance. I would say Chile comes probably next and then Peru. It's a bit of a smaller economy that's just starting to ride the wave.

Overall, I think it's definitely growing in our place as you know and from different areas. On the one hand, big corporations are realizing that they need to undergo a digital transformation if they want to win in the digital economy. Many of our leading employers are certainly like big banks and retailers. On the other hand, more people are actually taking a bet to start a tech company of their own and as the availability of capital growth and as we have more talent, then starting up something of your own also becomes more feasible. That's also a leading source of employment for our students.

[0:47:24.3] CM: In terms of the ecosystems, are there kind of facts and figures that you can share with us in terms of what sectors are growing the fastest and where you find most of the attention being focused on in terms of maybe VCs and kind as well?

[0:47:40.8] MA: In Latin America, if you take as a whole in terms of VCs, Brazil definitely takes the lead by a lot. Brazil is an entire continent of itself, so that definitely takes the lead. Then Mexico comes next, and then I think Chile. Colombia is also doing very interesting things. I think

Peru would also join the group very soon. As people become more digital, internet connectivity is growing on these countries, mobile penetration, smartphone penetration is growing. People are starting to demand more digital product, and I think that's a big push.

[0:48:25.5] CM: I was doing some research into the tech space in Africa for an interview on the future. One thing that came across, somebody that there are certain products and services which only make sense in a context for Africa. Would you say that there are certain products as well and services which only makes sense in Latin America because of maybe the language and the culture, for example?

[0:48:52.6] MA: I don't know. I would have a broader perspective, I think, I would say that, yes, maybe there are certain products and services that only makes sense in a particular region at a particular time, at a particular timeframe or economic development. I think, overall, the changes as times go by. I do see many of the things that I already see in the states and in Europe. They're going to be here soon. I think that's the trend. I would say on a timeslot basis.

[0:49:26.1] CM: From your viewpoint, what would you say is lacking in the Latin American tech ecosystem and what would you say is being done very well?

[0:49:36.2] MA: I think there's a few elements. On the one hand, we need more talent, all sort of talent. We need very prepared people that decide to launch a business. It's tough to really run a startup, so we need the best people to say instead of going for the corporate career, I'm going to go and try these out. For that possible you need that capital available. You need the connections available to the market. There's a series of elements, and I think it's hard to point one now. It's like the chicken and the egg, which one goes first, the entrepreneur or the capital? I think they both need to move forward together at the same time.

[0:50:16.0] CM: In terms of what has done very well, what would you say that is?

[0:50:19.7] MA: So I mean, it's interesting to see the role governments are starting to play. I don't know if I would say very well not, but I think they're doing very interesting things and that's an effort that's definitely worth noting. For example, in terms of capital, the government in Chile, now, the government in Peru, the government in Colombia, they've been like one of the leaders

in terms of providing risk capital for entrepreneurs and even go beyond that for funds. I think that's something very very worth noticing. They're pushing to move the ecosystem, and it's one element. They kind of do it alone, and they need to do other things. Government, it's not only about practically pushing these, but it's about reducing barriers for people to say, "I want to start a business, and that's easy and I can do it because there's adequate relation." I think that's one thing that I would definitely point out.

[0:51:19.0] CM: Are they putting that same emphasis on teaching the students in their schools how to code in the way that you're doing it. Are they still kind of having the outdated curriculums and teaching stuff which maybe isn't as relevant today as it was in the past?

[0:51:35.4] MA: Yeah, I think that's a longer battle probably, because to get public education in technology to the top tier quality, I think there are some great example but they're definitely the exception.

[0:51:50.7] CM: What examples would those be?

[0:51:52.5] MA: There are some very good public universities that have a very good computer science faculty, for example, but they're very small. Definitely, they're not going to be the ones to buy themselves, cover all that unmet demand. Yeah, they're quite small and not necessarily very accessible.

[0:52:12.7] CM: Thank you for that, Mariana. I appreciate your time and I look forward to speaking again in the future.

[0:52:18.2] MA: Great. Thank you so much for the invitation.

[END OF EPISODE]

[0:52:24.2] JM: Thanks to Symphono for sponsoring Software Engineering Daily. Symphono is a custom engineering shop where senior engineers tackle big tech challenges while learning from each other. Check it out at symphono.com/sedaily. That's symphono.com/sedaily.

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