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Please explain how the MIT-Zaragoza program began.



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MIT has had a masters of engineering and logistics program since 1998. It is a nine-month full-time masters program. It is aimed at professionals, most who have an average of six-years experience. They look to gain the technical skills that MIT can offer, the innovations and approaches of the new concepts in managing supply chains and we imbed a lot of leadership components in there so that it's not only about solving problems but also teaches the leadership skills to implement the changes. This is important when we get to the LINKS simulation because we are really trying to aim at both the problem solving and the management skills as well as the leadership skills.

Six years ago we set up a partnership with the government in Spain to establish a new research institute called the Zaragoza Research Center. We hired faculty members and built a "start-up university". We established a new masters program that is a sister program to the M-Log program at MIT. The one in Zaragoza we call the Z-Log program. It is a nine-month professional masters program. We also started a PhD program, an executive education program, and extensive research with the faculty members we hired there.

We based the curriculum in Zaragoza on the curriculum at MIT. We have been customizing and adapting it according to the abilities of the faculty, so it is changing. Some of the changes we make in Zaragoza we bring back to MIT. We didn't want to just copy MIT, but we built off of MIT's foundation and we get benefits back from the innovations that are happening in Spain. We continue to evolve the curriculum on both sides and share the best benefits and both programs improve as the result.

How did you tie the students together for the LINKS Simulation?

We wanted to have a very close tie between the students in both programs and we also wanted to give the students in each program a chance to study at the other campus. So in January, there is a special period at MIT called IAP, Independent Activities Period. This is a time when most degree programs do not have courses that are required for credit. Instead it is a time when there are a lot of special courses, seminars, and opportunities for travel and internships, etc. for the MIT students. It is basically a month between the fall and the spring semester where we had a chance to do something unique with these two masters programs. We designed what we call our "International Exchange". The students from Zaragoza come to MIT for three weeks, and the students from MIT go to Zaragoza for one week. Basically, the students from both programs are studying together for an entire month.

We have a seminar series we call SKILLS—Supply Chain Leadership and Innovation Series. We bring in executives, vice-presidents of supply chains who come in and talk about innovations

in their supply chains and also the leadership skills to implement innovations and how to successfully roll them out in their organizations.

We also do tours of facilities as part of this month-long experience. Everything is focussed on more practical skills—the leadership skills, what executives are doing in their supply chains, tours to see how things are done in practice. It is a very practical approach to see how supply chains are working so the students who have learned the theory in the fall can see it in practice.

This is also where the LINKS simulation comes into play. We call it our “Supply Chain Challenge”. The students from MIT, Zaragoza and also we have a third partner program that joined this year for the first time, called the Center for Latin American Logistics Innovation—CLI— which is a certificate program offered to students at top universities in Latin America. Students who are in existing masters programs throughout Latin America can apply to be part of a special course which is offered part of the time in Bogota, Columbia where CLI is located and they spend two weeks at MIT along with the Zaragoza students. There are three groups of students from three different partner centers that are together. We put them together on teams and mix them so that every one of the teams of six have students from all three groups.

This year we had 72 students and we had 12 teams. We divided them into two different industries. Each team may have some students they know but they all have new team-mates that the need to get to know and understand what their capabilities are and how can they effectively work together to win the challenge.

Our program tries to develop both the problem-solving and the supply chain knowledge as well as the leadership skills and working in a team. We are trying to use the simulation for two purposes: to understand and apply the supply chain theory they have learned in the fall, as well as to learn how to work together on teams and develop leadership and teamwork skills.

Are the classes taught in English?

Yes, in Spain, Latin America and here all of the classes are taught in English.

When the students go over to the other country, are they on their own or do they stay with local families?

We have lodging arranged for them. They stay at hotel space that we have for them. The students that study at MIT are from 12 different countries, and in Spain there are students from 20 different countries. Typically we have many countries represented. It is not just students from where the programs are based but it is a very international program in terms of the composition of the class as well.

What is the goal for LINKS to bring to the program?

The objectives are twofold—applying the supply chain theory and analytical skills they developed in the fall and secondly, to develop their leadership and teamwork skills. Each of those is equally important.



It falls exactly midway between the term. We play it over two weeks—they start playing the simulation and have their initial results and have submitted a set of decisions, and then we have a two day workshop on teamwork. There are activities outside of the simulation game but they do it in their teams, so the LINKS teams that are formed go through the teamwork exercises together.

During the workshop, they will submit another set of decisions and after the workshop they submit decisions every day for the next two weeks and we play out to 12 months. We have a class every day and a speaker series is also going on at the same time. During that time, I will occasionally present a stock report, quoting stock prices of the companies. We don't talk a lot about the simulation in the classes because they don't want to share what they are doing. They want to win the game. They keep playing and then we determine the winner and we do a debrief. In the debrief, we talk about the supply chain strategies they used, how they made decisions, what the teamwork dynamics were, how effective their meetings were and how did they plan their meetings? The debrief is dual purposed just like the game is...to review supply chain strategies and review the leadership dynamics.

Teams are randomly assigned, and each team contains students from all the programs, but we also randomly assign their roles. We have a CEO and VP's in five different areas; procurement, production, distribution, marketing & sales, and shared services. They are all appointed. In the past we have tried some different things like firing the CEO halfway through, but right now we are doing it this way. We have considered individual scorecards based on the students results according to the role that they had. We haven't implemented that yet. Right now it is just the teams competing against each other. The winners get a \$50 gift certificate from Amazon.

How long has this program been going on?

We have been doing this for six years and have used LINKS all those years. Students come from different areas of the world, so the global aspect is not new to them. Depending on where they are from, they may have a bias as to which region is the best one to be operating in, which may not be based on data but is based on their own feelings. Sometimes their background will bias their decisions even if it is not backed up by the data. It is good to have a global aspect because most companies that they will work for when they graduate are global companies.

There is a lot of richness to the game, and in some cases given the short period that they play they may not recognize all of the sophistication of the game and capitalize on it. Although some of the teams do take it seriously and develop a mini MRP system or ERP environment where they can put in their forecasts and it create their production plan and link it into their financials. We have had some teams who have done some very sophisticated things in terms of trying to manage the supply chain. In general, most of them are very engaged in the game and enjoy the

competitive aspect of it. The students have to write a thesis also in January, and should be working on it during this time period, so I sometimes hear that they spend more time on the game because they get consumed by it.

It's good that they are meeting new students and they get to know each other. Having the fresh blood infuses some energy into the group and helps the competitive nature of the game. They like to have the chance to apply their knowledge. The biggest frustration is that they feel they may not have as much control over the customers based on what it is that makes them want to buy. Is it product design or marketing spend? They feel that their ability to create demand on the marketplace isn't there and they don't have the model to do that. They aren't sure what is going to make a successful selling product. In the game, they have 9 decision points over 12 days which covers an entire year of the business since the first three months are set up for them and are all equal for the teams.

Has it been the same since you started?

The first year we had a course on international logistics in January and we didn't have a course in Leadership at the time. So I did the simulation game to introduce the global aspect to supply chains. I quickly realized that there was a lot of learning that was happening because of the nature of working on teams and how they made decisions. At the same time, we were hearing from companies that what they wanted in graduates was more than just the problem-solving skill set, that they would expect from MIT. They also wanted people that could have the soft skills to implement the ideas in the company and to lead teams. In the second year, we introduced a lot more on leadership. Students learn about themselves in the fall and during January they are learning how to take the skills they have recognized in themselves and apply it to how one works and how one thinks in a team setting.

One of the things we do halfway through is have a "board meeting". We, a board of two (me, with my co-instructor) sit down with each of the teams and they have to report what their performance has been to the board. Each person from the CEO down has to start out explaining what they have been doing—outlining their strategy and effectiveness. Each VP has to talk about their area and how they are performing. This is another instance where they have to work as a team to communicate their strategy and to be able to address any challenges. Almost every team has some issue or metric they are not performing well on, and we make it hard for them to defend it. We try to shake things up a bit with the board meetings.

How does the travel aspect affect this program?

Travel is an interesting part of the program. Supply chain management is a global profession, so you should understand how things are working in a different part of the world, and how is it different and we also wanted the students to get to know each other better and build a larger network. Having them together is important so we have to travel to do that. I think we do a very good job that one out of the nine months they are studying with their sister program, so it's a significant part of the curriculum.