



Evolving Preferences For LINKS Industry Setup

Zach Zacharia is Associate Professor of Supply Chain Management at Lehigh University.

Which courses are you teaching?

I use the Standard Supply Chain Management simulation for my semester long undergraduate class and Supply Chain Fundamentals for a 2 day Supply Chain Strategy MBA class. Over time I have made several changes to the way I teach the undergraduate class.

How do you set up your LINKS Industries?

I used to go with team sizes of four or five students for the Standard Edition. However, at five you start to get students who are coasting a bit and are not as involved in the simulation so I have changed the team size. I also do not give the students all the input decisions at the beginning.

Instead I start round one with three input decisions and then I add two decision choices for rounds two and three so by round three they have seven input decisions. Randy calls them switches. So it gives the students more capabilities when they do each run.

Another change I have done is to incorporate a practice round at the beginning of the simulation. The advantage of the practice round is that it gets students thinking of the process more than what they need to do correctly. They make their decision, they find out how they have to submit the decisions, where and when they should meet, and then they get the feedback. After the practice round, everything is reset, so if they make some blunders everything goes back to the start.

About three years ago, I had a team that did a serious mistake at the very beginning and then they never recovered so practice round helps avoid this scenario.

How do you set up your teams?

This year, I went with teams of three students. With teams of three it's really impossible for one of them to hide, because there's too much work to do. I find team sizes of three and potentially four, is perfectly fine.

I was a little worried about the workload but after discussing with Randy, I decided to try teams of 3 students for the first time. I am satisfied the students were able to keep up with teams of 3 and I would do this again for the standard supply chain simulation.

If I have more students I increase the number of industries. Even though you have an option to have up to 6 teams in an industry, my personal preference is to have two industries with a smaller number of teams in each.

Having a smaller number of teams keeps the teams in last place in each round feel they have a chance to win, as they are never that far out of first place.

This past semester I had two industries, 24 students in total, with 4 teams of 3 students in each industry. I also had an inert firm so there are five firms all together. The inert firm makes no changes and decisions, but serves as a baseline.

How did the students react to the inert firm?

It is also good for the students to see a firm that they can compare themselves to—one that is not making any changes. There are cases where the inert firm can be ahead of a working firm, proving that no decisions might be better than making some wrong decisions. One team made a really dumb decision in round six and they barely beat the inert firm by the last round. I tell the students “remember, the inert firm isn't investing in anything, so there is no cost.”

What kind of mistake did they make and how did you rectify it?

I had the switch for allowing them to build warehouses in region two and region three turned on. One of the three students misunderstood the screen and x-ed it out, and turned off that switch. They looked at the screen that said whether they were going to manufacture and sell products and they thought that meant that they didn't want warehouses, but actually they closed those regions.

This feature is always in there—you can choose not to sell anything— but that's crazy because that's where the market share is. Sure enough, they got no sales! This screwed everybody else

up because all of a sudden all of the other three firms got access to the market share that was theirs. But the other firms were not expecting this and everyone went into emergency production because they sold a lot more than they expected.

It was one of those students who did not read the manual or even just understanding the basics tenants of the game.

This was round six and I was very disappointed. I talked to Randy and let them re-introduce their products back in because they would have never recovered if I were to have let them introduce only three products at a time. As it was, they still came in last place, but they did barely beat the inert firm. It was a truly monumental error of misunderstanding an input screen.

Do the students know beforehand what switches you are turning on?

In the first round, they cannot change parameters. Then, I tell them they are only going to worry about two things— forecasting and purchasing. Next round, I allow them to select the kind of transportation provider which they are going to use and then the next round, I let them change prices and generate demand. Each time I'm adding a new and another set of decisions that they need to consider. Then they get four rounds where all the capabilities are available.

Do you feel that with a three-person team, the workload may be higher, but you're getting much better participation?

Yes, there was no indication from their peer evaluations that anyone was slacking off. The previous year when I had teams of five, the peer evaluations definitely indicated that they were not all pulling their weight. And, it might be harder to do with five — because they all get together in a meeting and some people are quieter and could be perceived as not pulling their weight.

Why not use more firms and fewer industries?

I feel that when a team is in fifth or sixth place, they feel they are never able to recover. When there's only three or four teams in an industry, no team is that far away from first place.

Do you follow the same guidelines for your graduate class?

In the graduate class (Supply Chain Strategy), I run it as a two-day class. I now teach it with a week in between each game run day and I put a game run in the middle of the week so that students have more time to assimilate. When I put that extra day in, it's a little more work for me, because I have to be aware of it for the week as opposed to just one Friday and one Saturday. It's a better learning experience because students are so stressed when they're making decisions. This gives them a little bit more time.

When I had students that were doing it over two days, they were overwhelmed. I didn't mind them being overwhelmed, because they were making some decisions under pressure but the quality of the reports and quality of the competition improved when I added an extra round in the middle of the week. We met on a Friday and ran three rounds, then ran a fourth round on Wednesday, then two more rounds Saturday and then a report. I think overall it turns out to be a better experience for the students.

When you have teams of three, how do you pick the teammates?

In the undergraduate class this year for the first time, I let them pick their own teams, and I'm bit disappointed because my super strong students hung out together. The teams that have the highest marks finished in a high position and the teams that had an aggregate lower grade came in at the bottom. Those teams were not doing the kind of depth of analysis as the higher ranking teams. I am now going back to my old method of picking teams .

I use a baseball team's collective where I name captains of the teams who come and see me. We have everybody's resumes and then each person gets one pick all the way down the line. Then at the end of the first pass, that person gets two more picks. So the last to pick actually gets three choices of whoever is left and it goes backwards up the line for everyone.

It forces people to get only one friend, and good people get spread around more evenly.

For my MBA class, the students walk into the class and pick a slip out of a container which has their team number on it and that's where they belong. So it's totally random because the MBA students don't know each other all that well while undergraduates in the capstone course have had four years together.