



Adapting and Enhancing LINKS for Multiple Audiences

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At TCU, we have a strong focus on experiential learning throughout our curriculum and have been enhancing our supply chain program with the LINKS Supply Chain Management Simulation since 2004 (see Table 1). We first introduced LINKS in our MBA-level capstone Supply Chain Strategy class. We discovered it is a great tool to reinforce four key elements of our supply chain curriculum: (1) the importance of cross-functional integration, (2) the significant role of supply chain partners, (3) the need for data-based decision-making, and (4) the connection between supply chain performance and business results. Since that initial introduction 6 years ago, we have used the LINKS simulation with a diverse set of constituents and in a variety of formats and settings. Working with Randy Chapman, we have found it easy to adapt LINKS to any situation and in every case, with great results. What we have tried to do is learn from each application and adapt the format and supplementary assignments to meet the needs of various constituents.



Undergraduate Supply Chain Strategy Capstone Course

When we first rolled LINKS out in our undergrad program, we were struggling with how to make it work with very small class sizes. Many thanks to Joe Hanna at Auburn University for being willing to work with Laura Meade at TCU to combine small classes into one competitive industry in LINKS. We did avoid telling our students they were competing against MBA students at Auburn, but it worked and we saw it was a great way to give our students an appreciation of the complexity and interactions inherent in managing a supply chain.

As the class sizes grew, we were able to form a complete industry within each class. This class is a 14-week, 3 credit hour class. The students spend a few weeks preparing for the simulation, and then complete 9 decision rounds in the LINKS Supply Chain Management Simulation [Extended Edition]. Dr. Meade has incorporated a number of assignments to help our undergrad students learn from the simulation, including (1) completing online tutorials with a special emphasis on reading income and balance sheets, where they may not be as savvy as our MBA students, (2) completing a multiple choice

exam over basic facts, and (3) writing memos about postponement, opening a DC, and reconfiguration. The students are also required to use Excel to manage their decisions and write-up each week their current strategy and what they are trying to accomplish in the given run. This assignment is meant to give them experience using Excel to capture and analyze data and to track and evaluate their decisions over time. When the simulation is complete, students turn in a summary report about their LINKS strategy, initiatives, and performance, with an analysis of their performance versus competition and key drivers for their results. This final report is used for AACSB “Critical Thinking” accreditation purposes.

Our students are also required to make two presentations to the Board of Directors – one midway through the simulation and one after the final round. They review with the Board their strategies, analysis of the completion, and performance results. Initially, we asked other faculty in the department to serve on the Board of Directors, but found if Board members have no experience with LINKS, the quality of the questions and evaluations is not what it should be. We began to invite alumni from our MBA and Executive MBA programs who have experienced LINKS to serve on the Board of Directors. We found this is a great way to get our alumni back on campus and engaged with our students and they ask great questions and provide really good feedback to the students.

TABLE 1. LINKS OPTIONS

Course	Program	Format	LINKS	Special Features
Supply Chain Strategy Capstone Class	Undergraduate (< 16 students)	14 week semester	Extended Supply Chain 7 weekly decision rounds	Class size too small to form LINKS industry – competed with students at Auburn University
Supply Chain Strategy Capstone Class	Undergraduate (> 16 students)	14 weeks semester	Extended Supply Chain 9 weekly decision rounds	Mid- and Post-simulation Board of Directors reviews – BOD made up of MBA and EMBA alumni with LINKS experience.
Supply Chain Strategy Capstone Class	MBA - Supply Chain students	Once per week over 7 weeks	Extended Supply Chain 7 weekly decision rounds	Mid- and Post-simulation Board of Directors reviews with Corporate Executives from Supply & Value Chain Center Advisory Board.
Supply Chain Strategy & Information Technology	Executive MBA	Every other weekend over 8 weeks	Extended Supply Chain 6 weekly decision rounds 2 nd round add “Generate Demand” 3 rd round add “Product Configuration”	Mid- to senior-level managers from multiple backgrounds and industries. LINKS provides “big picture” perspective for strategic decision-making.
Interim Elective over Winter Break	Professional and Full-time MBA elective, multiple majors	1 weekend – Friday pm, Saturday & Sunday all day	Service Operations Management – 2 decision rounds Friday 3 decision rounds Saturday 1 decision round Sunday	Intense immersion weekend – length of course is 20 hours.
Achieve Summer Institute	Non-Business Majors	4 week program teaching basics of business	LINKS Enterprise Management	During the second half of the program, the LINKS simulation is used to pull together what they learned related to specific disciplines
NTU Online Supply Chain Course	Working Professionals Pursuing MBA Online	14 week online course with virtual teams	Extended Supply Chain 7 weekly decision rounds	Assigned LINKS Tutorials and analyses regarding regional profitability, research requirements, postponement and balanced scorecard metrics to enhance learning within virtual teams.
Supply Chain Strategy & Integration	Corporate Training	2 ½ days		VP Global Supply Chain – member of SVCC Advisory Board served on MBA Board of Directors, sponsored corporate training, and participated in final review of corporate team debriefs

MBA Supply Chain Strategy Capstone Course

The MBA capstone course is a 1.5 hour, 8 week module in the final semester of the program. Students complete 7 decision rounds in the LINKS Supply Chain Management Simulation [Extended Edition], with supplemental case analysis and discussion throughout the class. In this class, we engage members of the Supply & Value Chain Center Advisory Board to serve on the LINKS Board of Directors. As with the undergrad class, students give a mid- and post-simulation review of their strategy, key decisions, and performance results, then field questions and receive feedback from Board members. This gives our corporate partners a chance to see our students in action and engages them as a part of the students' learning experience.

Executive MBA Supply Chain Strategy Course

This program is designed for high-potential and senior-level managers who want to strengthen their business acumen and strategic leadership skills. These students are experienced (average 17 years work experience and 9 years managerial experience), but represent a wide range of industries and roles. The Supply Chain Strategy course is designed to give students (1) a strategic perspective of the systemic nature of supply chain decision-making, (2) an understanding for the importance of cross-functional and inter-firm linkages, and (3) an appreciation for concepts and tools to improve supply chain performance.

Students meet every other weekend over an 8 week period, and complete 6 weekly decisions rounds. LINKS is a supplement case discussion to help students understand the real-world application of the concepts and tools discussed in class. Students are required to give a post-simulation review, which gives each team an opportunity to learn from the experience of their competitors.

I was quite hesitant to introduce LINKS into this class, primarily because of time constraints. I set aside 1½ to 2 hours in class for teams to finalize and input decisions in rounds 1, 3, and 5. This gives me the opportunity to visit with each team to answer questions and assess their understanding of the simulation. Decisions 2, 4, and 6 are made during off weeks. The students love the competition and the feedback has been overwhelmingly positive.

Non-traditional Courses

Based on our success in these traditional courses, we have integrated LINKS simulations into a variety of non-traditional formats. For MBA students not concentrating in supply chain, we offer a 1.5 credit hour interim elective over winter break, where we have incorporated the LINKS Services Operations Management Simulation. This is an intensive immersion weekend format, with 6 decision rounds over

a 3 day class. Students are required to read the manual and work through specific tutorials prior to class. On the first day, the faculty member opens with a 1 ½ hour intro, followed by team sessions for each round of decision-making. Post-simulation, each team makes a presentation to the class, discussing their strategy, successes, and failures. This group discussion on Sunday afternoon allows each team to learn from the experience of others in the class.

Our Achieve Summer Institute is a not-for-credit course for non-business majors. The class meets from 9 – 4 daily over a four week period. Students are exposed to all facets of business management and the LINKS Enterprise Management Simulation is used to help them integrate what they have learned related to specific disciplines such as accounting, finance, management, marketing, and supply chain. Students give a final presentation on their LINKS experience including the implementation of their strategy, results and lessons learned. As a side note, learning another variation of LINKS is not difficult and the reporting formats are similar.

I have also used LINKS in a 14-week online course developed for NTU School of Engineering and Applied Science at Walden University. In this course, virtual teams work together remotely to complete the LINKS decision-making rounds. In this environment, the experience in LINKS is supplemented with written assignments to reinforce the learning from LINKS.

Conclusion

LINKS is versatile and can be utilized in a variety of formats with students at multiple levels of experience and education. All our students have benefited from wrestling with the complexities and trade-offs in the simulation. But I think most importantly, no matter how much experience the students have, they can't resist the competitive challenge! Our students love the competition with their peers, which means they get engaged and apply themselves – and as a result, have a lot of fun and learn more than they expected.

What's Next?

We know there is a huge opportunity to develop a LINKS competition as an executive education offering. We are looking at the possibility of developing a competition among firms who are sponsors of our Supply and Value Chain Center. Many of our Advisory Board members serve on the LINKS Board of Directors for our MBA students, so they already have an appreciation for the educational power of the simulation. And like our students, they all love a good competition!
