



**Patio Swings Intermodal Shipping Competition: An Inquiry Based Partial Information Exercise**

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## **Patio Swings Intermodal Shipping Competition: An Inquiry Based Partial Information Exercise**

### **ABSTRACT**

Rather than providing all the required information as classroom exercises typically do, this international purchase and intermodal transportation competitive in-class exercise intentionally holds back selected supply chain details. This Inquiry Based Learning (IBL) approach simulates a real-world Distribution Requirements Planning (DRP) scenario by requiring students to identify what information they need and seek out those details from the instructor while competing with fellow student groups. In this 20-30 minute exercise students are challenged to identify the all the necessary supply chain activities required to effectively ship patio swings from a supplier in China to a national retail chain in time for a spring sale. Generating the benefits of improved critical thinking in a fraction of the time required for traditional IBL, the approach is best described as a Partial Information Exercise (PIE). A student survey (n=310) found that students strongly supported the inquiry approach, it generated significantly increased interest in global supply chain management roles and responsibilities, and over 91% of participants recommended the exercise continue to be part of the introductory operations and supply chain management course.

### **INTRODUCTION**

Would providing only partial information in a class exercise, requiring students to determine what additional information they need and then seek it out better prepare them for the real world they will experience upon graduation? How can we increase student interest in potential careers in global supply chain management? These questions were the genesis of this exercise. Patio Swings Intermodal Shipping Competition is a competitive in-class exercise which intentionally holds back almost half of the supply chain details needed to optimally purchase and globally transport patio swings for a national retail chain's spring sale. The exercise simulates a real-world Distribution Requirements Planning (DRP) scenario by forcing students to first identify what information they need, and then subsequently seek out those details by asking the instructor while competing with fellow student groups.

Similar to IBL's traditional research based approach, the learning approach of this exercise requires critical thinking, time management, and communication skills for students to be successful. Different than IBL however, this exercise aids the development of all these skills in a short classroom exercise rather than IBL's much longer student projects. Furthermore, the exercise enables students to experience the challenges and problem solving required to coordinate a major international purchase and intermodal transportation for a national retail chain, generating increased interest in global supply chain roles and responsibilities. From an instructor standpoint the exercise is very easy to administer, requiring no technology other than some minor pre-class photocopying.

This teaching brief starts with a literature review identifying the need for such an exercise, and is followed by an overview of the exercise and details of how to effectively administer and debrief it in only 20-30 minutes of class time. Possible variations and extensions are suggested enabling instructors to tailor the exercise to their local market and personal preferences. Measurement methodology and evidence of teaching effectiveness are provided through a student survey and an assessment of learning based on a final exam question before the conclusion summarizes the contribution.

## LITERATURE REVIEW

Teaching innovations have been created for many topics in operations and supply chain management courses, e.g. forecasting (Gavirneni, 2008) (Snider and Eliasson, 2013), inventory management (Robb et al., 2010), and line balancing (Snider et al., 2017, Fish, 2005). Within supply chain management, there is the classic Beer Distribution Game (Sternan, 1989) that enables participants to experience the bullwhip effect. Other supply chain games focus on such specific topics as sourcing alternatives (Ashenbaum, 2008), negotiation (Gumus & Love, 2013), and integration (Harnowo et al. 2016).

A successor to Material Requirements Planning (MRP) which focuses primarily on planning for an individual manufacturer, Distribution Requirements Planning (DRP) is a time-phased stock-replenishment plan for multiple levels within a supply chain (Heizer and Render, 2011). In DRP lead times for various stages of supply chain manufacturing and transportation are incorporated into determining planned order releases to satisfy eventual customer delivery dates. This involves such activities as coordinating the delivery of empty intermodal containers for a foreign supplier to load their just finished products into, for example. With our global supply chain based economies, DRP is a critical skill for supply chain management professionals, yet it has seen little published teaching innovation relative to other OM topics.

Inquiry-based learning (IBL) is an instructional approach that has been employed in numerous academic fields. Aditomo et al. (2013) describe IBL as a learning activity that is question or problem driven. It includes a learner-centered approach in which students identify what they need to know, conduct research, and apply critical thinking to develop a solution to a real-world based problem (Savery 2015, Aditomo, et al., 2013). Encouraged by Foster and Carboni's (2009) call for integrating IBL into cases, Erzurumlu and Rollag (2013) describe how they implemented an inquiry approach to a term-long exercise by incorporating role-playing into an operations strategy case based on an appliance manufacturing company. They found the approach resulted in more active and engaged students while also developing their critical thinking skills. Overall however, there appears to be limited published inquiry based Operations Management (OM) exercises, and none where such an approach can be conducted via a brief classroom activity.

This exercise contributes a highly engaging DRP exercise while also incorporating an engaging inquiry learning approach to aid student development of their critical thinking and communication skills. It could be categorized into the 'identifying' category of the Levy and Petruilis (2012) IBL framework as it is structured by the instructor but encourages the students to ask questions to obtain information required to complete their task. However, this exercise is not "research based" in its inquiry component as IBL traditionally is, but rather an innovative twist to traditional classroom cases and exercises. While somewhat similar to Inquiry Based Learning (IBL), the pedagogical approach is best described as a Partial Information Exercise (PIE).

## EXERCISE OVERVIEW

This in-class exercise has student groups competing to perform DRP activities while also requiring them to identify and ask for missing pieces of information they need to solve the problem. It can be completed in approximately 20-30 minutes, with no pre-class preparation required for students. In fact, to better facilitate the inquiry learning approach, we conduct the exercise without any DRP theory or examples covered in advance of it. Student groups are presented a scenario (Figure 1) in which they must order and coordinate the shipping of patio swings from China for a scheduled spring promotion at a national retail store. They must determine: 1) what date to place the

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4 order, 2) how many intermodal containers are needed, 3) what date the containers need  
5 to be delivered to the supplier, and 4) how many temporary staff must be hired at the  
6 Distribution Centre (DC) to process the large shipment.  
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9 Insert Figure 1 Here  
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11 Students are initially provided only eight of the fourteen pieces of information  
12 required to answer all four questions on an information sheet (Figure 2).  
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15 Insert Figure 2 Here  
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17 They are then informed that they can obtain the additional information on slips of  
18 paper but only if they identify what information is missing and then ask that  
19 corresponding question to the instructor. Which information is initially provided on the  
20 information sheet handout and which information students must request is summarized  
21 in Table 1. The first group to submit correct answers for all four questions is the  
22 winner.  
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25 Insert Table 1 Here  
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## 28 **EXERCISE ADMINISTRATION**

### 29 **Pre-class Preparation**

30 Prior to conducting the exercise in class, the instructor should photocopy one information  
31 sheet (Figure 2) and one answer submission form (Figure 3) for each group. Stapling  
32 these together speeds up the in-class handout process. The instructor also needs to  
33 photocopy and cut the additional information slips for the number of groups expected to  
34 play (e.g. 10 of each). Using different coloured paper for each slip is recommended to  
35 help identify which face-down slip to provide. Bringing some blank paper or sticky notes  
36 for students to write their questions on is recommended as many students bring only  
37 laptops / tablets to class and surprisingly do not have spare paper available. Finally, bring  
38 a small incentive / prize for winning team such as chocolates or fruit.  
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41 Insert Figure 3 Here  
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### 44 **Introducing the Exercise (5 minutes)**

45 On the screen, review the student information sheet and a blank answer submission form.  
46 State that their questions must be written on blank pieces of paper and brought to the  
47 instructor to prevent other groups from hearing what question is being asked. Ask the  
48 students to form small groups for the competition. Groups of three to five students is  
49 recommended however it can be tailored to class size and instructor preference. Handout  
50 a printed copy of the information sheet and submission form to each group. Finally, at the  
51 instructor's table, place the six information slips in separate piles face-down at the table  
52 where students will submit their written questions. Placing them face-down prevents  
53 students from attempting to read the additional information slips while submitting a  
54 question.  
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### **Administering the Exercise (10-15 minutes)**

Student groups will immediately begin identifying the additional information they require, writing their questions on paper, and bringing them to the instructor's table. Limiting each group to submitting one question at a time has proven an equitable policy especially as queues may briefly form. Figure 4 provides a picture of the classroom while the exercise is in progress. Shown on the instructor's table are the face-down, colored information slips, the white paper submitted questions, and the chocolate food prize.

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Insert Figure 4 Here  
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Using colored information slips creates an even more competitive dynamic in the classroom as groups see fellow groups receiving a color they do not currently possess. Students have been heard exclaiming, "They just got the orange answer... what are we missing?" Samples of submitted questions and corresponding provided answer slip are shown in Figure 5.

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Insert Figure 5 Here  
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Periodically students will ask questions that are not answered by the additional information slips. Examples have included, "how many will fit into one intermodal container?" to which they are informed that they already have enough information to determine that, and "how many intermodal containers fit on the ship?" to which they are informed that this shipment alone will not exceed an ocean cargo ship's capacity. When lead time stages are provided, students have been known to ask "what is lead time 2?" to which they should be informed that lead time questions must describe the logistical step of their desired stage (e.g. from supplier to port of Shanghai). Groups typically submit their answer forms anywhere between 7-15 minutes after starting the exercise. To encourage all groups to submit their answers, refrain from announcing if any of the received submissions have all the correct answers until the debrief. Writing down either the time of day or the submission order (e.g. 1<sup>st</sup> to submit 2<sup>nd</sup>, 3<sup>rd</sup>, etc.) when groups hand in their completed answer forms is recommended (Figure 3). In the event that multiple groups submit correct answers for all four questions, that data can then be used during the exercise debrief to identify which of those groups was the first to submit and determine the winner. In our experience, the first few submissions often include at least one error as teams rush to be first to submit, and approximately 50% - 75% of submissions have all answers correct.

### **Debriefing the Exercise (5-10 minutes)**

The instructor should show how to calculate the correct answers for each of the four questions before announcing the winner. This ensures higher student engagement during the debrief and builds excitement as groups are either eliminated with an incorrect answer or wonder if they were the first to submit all four correct answers. Solutions for each question can either be hand calculated by the instructor and displayed via a document camera, or pre-prepared solution slides can be shown (sample in Figure 6). The maximum weight limit on the intermodal container is currently designed as a 'red herring' in that it does not impact the answers, however it should be verified as part of an effective solution process. Instructors could always change weight values to make this specification impact

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4 answers, but that would only be recommended for a senior level course. To conclude the  
5 exercise, distribute the prize to the winning team.  
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### 12 **Exercise Variations**

13 The exercise can quickly be localized by simply changing the arrival port city, DC  
14 location, and national retail chain name. For example, the exercise was successfully  
15 conducted by one of the authors at a UK business school where the arrival port city was  
16 Southampton, the DC location was Milton Keynes, and the national retail chain was  
17 Homebase. Durations and dimension measurements can also be changed to better suit  
18 local preferences. We use two “versions” of the exercise where the quantity of patio sets  
19 and the spring sale date are different. Varying just these two pieces of information  
20 changes all four of the required answers and mitigates against the risk of students  
21 obtaining the correct answers from a friend who attended the other class. If class time is  
22 limited, the instructor can provide a “free” information slip to all groups at the start of the  
23 exercise to reduce the required duration by a few minutes.  
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26 Further, the lead time ‘stage’ numbers (e.g. “Lead-time 3”) designed to aid  
27 introductory students by signalling the required logistics steps can easily be removed  
28 when conducting the exercise for more senior supply chain courses whose students may  
29 desire even more of a challenge. Finally, the instructor can choose to ‘role-play’ as the  
30 manager with the students acting as employees. This encourages students to critically  
31 think even more before submitting a potentially irrelevant question as they recognize the  
32 manager may not be as patient and nurturing as their instructor is expected to be!  
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### 35 **Exercise Extensions**

36 Instructors could ask students to prepare a process map of the supply chain that includes  
37 lead times rather than only asking for the specific required dates. Uncertainty can also be  
38 incorporated by providing students lead time averages and standard deviations rather than  
39 deterministic durations. Students can then be challenged to determine order dates that  
40 would provide a 90% or 95% probability of receiving the order on time. The real world  
41 application of the exercise could subsequently be provided by sharing a recent logistics  
42 news story, discussing a global supply chain case study, or having an industry guest  
43 speaker share their intermodal shipping experiences.  
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### 48 **MEASUREMENT METHODOLOGY**

49 Evidence of effectiveness was measured by both a student survey and an assessment of  
50 learning based on a final exam multiple choice question approximately six weeks after  
51 the exercise. Immediately after the exercise was completed in two recent semesters, an  
52 anonymous, optional, paper survey (Figure 7) was conducted in a required introductory  
53 undergraduate course in operations and supply chain management. All classes were  
54 taught by the same instructor, using the same instruction methods, on the same day during  
55 each term. The survey was designed to elicit responses on i) the learning approach, ii)  
56 impact on interest in working supply chain management the learning approach, and iii)  
57 the overall exercise.  
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Insert Figure 7 Here  
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In term 1, 142 completed surveys were received and term 2 provided 168 more for a total of sample size of n=310. Table 2 provides the Likert scale survey results in detail, the mean for each question, and the percentage of students who disagreed (-'ve), were neutral (0) or agreed (+'ve) with each statement.

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Insert Table 2 Here  
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## EVIDENCE OF EFFECTIVENESS

### Student survey results

The student survey results show very positive results for the exercise across a large sample size.

#### *Learning approach (Q2 to Q7):*

Students highly valued the learning experience of having to ask questions (mean +2.24, 96.1% positive) and over 85% found that withholding information made them think more than a typical business school exercise or case. The survey also reveals that students enjoyed the problem solving approach of the exercise (mean +1.91, 91.3% positive) and that over 85% of them recommend that more classes should use the approach of not providing all of the required information. It appears that the minor pedagogical change of intentionally providing only partial information has a major positive impact on the student experience. Question 4 shows students enjoyed the approach of making the exercise a small group competition (mean +1.61, 80.0% positive) contributing to the existing literature that business students enjoy classroom competition. Question 3 challenged the students to consider the real world work environment and predict if all required information will be provided for them to solve to a business problem. Responses show that over 78% recognize they will be expected to identify and seek out additional information in the workplace creating an appreciation for the opportunity to practice those skills which this exercise provides.

#### *Impact on student interest on working in supply chain management (Q1 & Q8):*

The majority of our undergraduates have very limited previous exposure to global supply chain management, and most tend to major in our accounting, finance, and marketing areas. Questions 1 and 8 measured students' reflections of being exposed to global supply chain management tasks through this exercise. The exercise generates very strong interest in learning about the tasks involved in coordinating an international purchase (mean +2.00, 90.6% positive) and encourages almost four times as many people (51.9%) to have increased interest in a career in global supply chain management than it discourages (13.2%). In hindsight, capturing what area the students majored in might have provided insights into which majors are more likely than others to consider a career in supply chain management after experiencing the exercise.

### **Overall Exercise (Q9 & Written Comments)**

From an overall standpoint, question 9's results shows overwhelming support for continuing the exercise with a mean score of +2.17 and 91.3 % supporting its inclusion in the course. Only 1.3% of students recommend against continuing it. Students were also given the opportunity to provide written comments as part of the survey. Comments were received on 99 of the 310 surveys. The following are some of the written comments from the student surveys:

*"This was fun and productive. New conceptual way of learning / applying material."*

*"Loved how we weren't given all of the info, made us think under a time crunch."*

*"Great exercise to teach us to ask questions to get more info to solve the question."*

*"Was more interactive with the questions you needed to ask to get clues"*

*"This was a lot of fun as we weren't given all the info"*

*"Really excellent way to cement the concepts learned in class!"*

*"Helpful in understanding / supplementing course concepts"*

*"Well explained and organized, helped to learn about supply chain processes"*

*"Enjoyed that not all the information was provided"*

*"Great idea to engage students!"*

*"Got us thinking"*

*"Fun. Competition makes these activities more memorable which is fabulous"*

*"Challenging, but learned a lot"*

*"Didn't like having to ask for info"*

*"Tricky, lots of thinking"*

*"Maybe too abstract? Need a process to follow."*

*"It is too early in the morning to do exercises like this"*

Although there were a few 'negative' written comments, they can be interpreted as student responses to being challenged to use their critical thinking and communication skills effectively. Both of these skills are not only critical for people working in global supply chains, but are also skills that all business students should possess upon graduation.

### **Assessment of Learning**

An assessment of learning was conducted by measuring student performance on a final exam multiple choice question based on the exercise. The exam question (Figure 8) was modelled on the second and most detailed question of the exercise, which required students to parse out when the intermodal containers need to be delivered to the supplier. Although the question provides all the information required, it included irrelevant 'red-herring' information designed to challenge students' critical thinking skills on the topic.

The final exam was conducted six weeks after the exercise, and was written by 171 students registered in sections taught by the same instructor who conducted the exercise. Note that only 142 completed surveys were received immediately after the exercise that term which means up to 29 students answered the exam question without experiencing the exercise. Furthermore, this exercise was the only content on DRP that was able to be covered in this introductory course. No additional lecture content or practice questions were provided to the students before or after the exercise due to an already filled syllabus. Analysis found that 122 of the 171 students, or 71.3% successfully identified option 'c' as the correct answer. Given all of the mitigating factors described above, it appears that this exercise alone can enable effective learning of DRP concepts while also contributing to the sharpening of students' critical thinking skills. Student learning from this exercise



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4 could more accurately be assessed by asking students to answer a question immediately  
5 before and after the exercise, or by comparing exam question performance between one  
6 group who experienced the exercise and one that did not. If ethics approval beyond an  
7 anonymous optional student survey can be obtained, future measurement should  
8 incorporate such methods.  
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## 10 11 12 **CONCLUSION**

13 This exercise and evidence of effectiveness has three major contributions. First, it  
14 provides a much needed, easy to administer, classroom innovation for teaching  
15 introductory supply chain management students the increasingly critical Distribution  
16 Requirements Planning topic. Successfully conducted in different countries, this exercise  
17 also provides cross-cultural appeal. Second, the exercise has proven to have a strong  
18 positive influence on undergraduate student interest in learning more about the roles and  
19 responsibilities of global supply chain managers. Finally, and most importantly, these  
20 results provide a clear and strong endorsement from undergraduate students for business  
21 instructors to consider incorporating such a Partial Information Exercise (PIE) into their  
22 classes. This approach appears to strengthen their critical thinking and communication  
23 skills while also better preparing them for the real world.  
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27 *All electronic files for the exercise are available upon instructor request to the*  
28 *corresponding author.*  
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For Review Only

## TABLES

*Table 1 – How required information is provided to students*

Information	Initially Provided
Quantity of patio sets needed	Y
Sale starting date (patio sets in-store deadline)	Y
Patio set boxed size dimensions	Y
Patio set boxed weight	N
Intermodal container is 40 x 8 x 8 feet with a 90% usable cubic limit	Y
Intermodal container maximum weight	N
Part-time DC staff cubic feet processing speed	N
Part-time staff effectively work only 6 hours per 8 hour shift	Y
Supplier is located in Nanchang, Jiangxi, China (700km from Shanghai)	Y
Lead-time 1: supplier (procure, manufacture, & package)	N
Lead-time 2: supplier transport + load at port of Shanghai	N
Lead-time 3: ocean transport (Shanghai to Vancouver)	Y
Lead-time 4: port of Vancouver + rail transport to DC	N
Lead-time 5: DC processing + truck to retail stores	Y

*Table 2 – Student survey results*

	<b>Q1</b> <i>Interesting to learn tasks for coordinating international purchase</i>	<b>Q2</b> <i>Having to ask questions was valuable learning experience</i>	<b>Q3</b> <i>All required information will be provided for me in real world</i>	<b>Q4</b> <i>Small group competition made exercise more interesting</i>	<b>Q5</b> <i>Made me think more than typical exercise / case</i>	<b>Q6</b> <i>Enjoyed problem solving approach of exercise</i>	<b>Q7</b> <i>More classes should use approach of not providing all info</i>	<b>Q8</b> <i>Exercise increased interest in working in GSCM</i>	<b>Q9</b> <i>Exercise should continue to be included in course</i>
<b>-3</b>	2	0	139	2	1	2	4	11	1
<b>-2</b>	2	1	78	4	2	0	4	8	1
<b>-1</b>	5	3	26	10	3	4	5	22	2
<b>0</b>	20	8	18	46	40	21	33	108	23
<b>1</b>	42	42	12	59	53	64	65	59	38
<b>2</b>	123	111	19	102	113	119	99	60	93
<b>3</b>	116	145	18	87	98	100	100	42	152
<b>mean</b>	2.00	2.24	-1.60	1.61	1.82	1.91	1.74	0.75	2.17
<b>-'ve</b>	2.9%	1.3%	78.4%	5.2%	1.9%	1.9%	4.2%	13.2%	1.3%
<b>0</b>	6.5%	2.6%	5.8%	14.8%	12.9%	6.8%	10.6%	34.8%	7.4%
<b>+'ve</b>	90.6%	96.1%	15.8%	80.0%	85.2%	91.3%	85.2%	51.9%	91.3%

## FIGURES

Figure 1 – Exercise Introduction Slides

**Global Supply Chain Logistics Exercise:**

- You work in supply chain for Canadian Tire and the flyer for a specific week in spring will have a popular patio swing on sale
- You are responsible for ensuring the patio swings are in stock at all Canadian Tire stores in western Canada when the sale starts!
- Canadian Tire purchases the patio swings from a supplier in China, then they are shipped via Intermodal container through the port of Vancouver to the western distribution center in Calgary before being trucked to individual stores.
- Due to the size of the product and shipment volume, part-time staff will have to be specifically scheduled for processing the patio swings shipment at the distribution center.

**Global Supply Chain Logistics Exercise:**

Work in small groups to answer the following questions:

- How many Intermodal containers do you need to book?
- What calendar date do you need to place the order with the supplier?
- What calendar date do the Intermodal containers need to be delivered to the supplier for loading?
- How many additional part-time staff must be scheduled to process this specific shipment at the distribution center on the day the shipment arrives?

Figure 2 – Information sheet provided to student groups

### Procurement Exercise: Patio Swings

#### Student Information Sheet





4000 units are needed for Western Canadian stores

The flyer sale starts on April 15th, 2017

Patio set boxed size is 6 feet long, 4 feet wide, and 1 foot deep

40 foot intermodal container is 40 feet long, 8 feet wide, 8 feet high  
(plan using max of 90% of cubic space)

40 foot intermodal container does have a maximum weight limit

Part-time staff work an 8-hour shift, however due to breaks and a buffer,  
assume they are only effective for 6 hours per shift

Supplier is located in Nanchang, Jiangxi, China (approximately 700km from Shanghai)

Lead Time 3: Ocean freight transport from Port of Shanghai to Port of Vancouver = 3 weeks

Lead Time 5: Process at Calgary Distribution Center & truck to retail stores = 1 week




Sources:  
<https://www.cdn.tire.com/brands/canadian-tire>  
<http://www.cosconline.com/eng/faq.html>

Figure 3 – Example student group answer submission form

Group #: 9 Time Submitted: \_\_\_\_\_ 4th

- 1) How many Intermodal containers do you need to book?  
21 Containers
- 2) When do you need to place the order with the supplier?  
December 17<sup>th</sup>
- 3) When do the Intermodal containers need to be delivered to the supplier for loading?  
February 11<sup>th</sup>
- 4) How many additional part-time staff must be scheduled to process this specific shipment at the distribution centre on the day the shipment arrives?  
3 additional part time staff

Figure 4: Classroom setup during exercise



Figure 5 – Example student inquiries and corresponding additional information slips

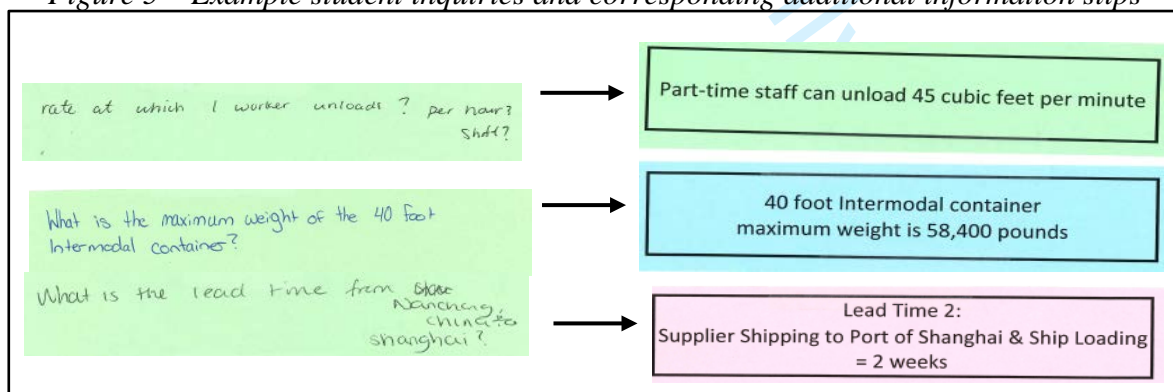


Figure 6: Sample debrief solution slide

4. How many additional part-time staff must be scheduled to process this specific shipment at the distribution center on the day the shipment arrives?

$$= \frac{\text{Total cubic feet incoming}}{\text{Cubic feet per PT per shift}}$$

$$= \frac{2000 \text{ units} * 24 \text{ sqft per unit}}{45 \text{ per min} * 60 \text{ min} * 6 \text{ hrs}}$$

$$= \frac{48,000}{16,200}$$

$$= 2.96 \rightarrow 3 \text{ people}$$

Figure 7 – Student survey

1. The exercise was an interesting way to learn about some of the tasks involved in coordinating a major international purchase. (circle your answer)	Strongly Disagree			Neutral			Strongly Agree
	-3	-2	-1	0	+1	+2	+3
2. Having to determine what additional information was needed and then ask those questions was a valuable learning experience.	Strongly Disagree			Neutral			Strongly Agree
	-3	-2	-1	0	+1	+2	+3
3. In the real world, all the required information to solve a business problem would be provided for me.	Strongly Disagree			Neutral			Strongly Agree
	-3	-2	-1	0	+1	+2	+3
4. The small group competition aspect made the exercise more interesting.	Strongly Disagree			Neutral			Strongly Agree
	-3	-2	-1	0	+1	+2	+3
5. This exercise made me think more than a typical exercise / case in the business school.	Strongly Disagree			Neutral			Strongly Agree
	-3	-2	-1	0	+1	+2	+3
6. I enjoyed the problem solving approach of the exercise.	Strongly Disagree			Neutral			Strongly Agree
	-3	-2	-1	0	+1	+2	+3
7. More university class exercises / cases should use the approach of not providing all the required information to solve a problem.	Strongly Disagree			Neutral			Strongly Agree
	-3	-2	-1	0	+1	+2	+3
8. This exercise has increased my interest in potentially working in global supply chain management position.	Strongly Disagree			Neutral			Strongly Agree
	-3	-2	-1	0	+1	+2	+3
9. This exercise should continue to be included in this course.	Strongly Disagree			Neutral			Strongly Agree
	-3	-2	-1	0	+1	+2	+3
10. Do you have any other comments about the exercise?							

Figure 8: Final exam multiple choice question for assessment of learning

You are responsible for ordering and transporting 3000 artificial Christmas trees from a supplier in China to all Canadian Tire retail stores in Western Canada for November 1<sup>st</sup>. The supplier requires a total of 6 weeks to manufacture the trees (2 weeks for ordering their raw materials and 4 weeks for their production). Loading and transporting the intermodal containers to the port in China will take 2 weeks. Ocean transport to Vancouver will take 3 weeks. Ship unloading and rail transport from Vancouver to the distribution center in Calgary will take 1 week. Unloading the intermodal containers and getting the trees shipped to each retail store will take 1 week. Any trees that remain unsold 3 weeks after Christmas will be returned to the distribution center. How many weeks before the sale date should the intermodal containers be delivered to the supplier?

- 12 weeks
- 10 weeks
- 7 weeks
- 6 weeks
- Not enough information provided