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**Simulating Operational Complexities: An Experiential Exercise with Laundry**

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**Abstract**

Responding to change has become a critical workforce competency and an essential skill for effective leadership and management along with abilities to work in a group, problem solve, and demonstrate creative capabilities. As part of this experiential exercise, participants execute process tasks associated with running a laundry facility. Participants search and retrieve product (linen), complete operational processes (common processes associated with preparing clean linen), and react to customer requests (changes in supply and demand). Participants must collaboratively work in a group and critically think and respond to customer demands in a fast-paced, competitive, and challenging environment while trying to successfully achieve objectives of the exercise. Materials in this exercise can be modified in order to use this activity in a variety of business, operational, supply chain management, and leadership courses. Additionally, this exercise can be customized to support concepts such as change management, problem solving, critical thinking, and team development.

During this session, educators will be instructed to participate in the exercise to experience the operational realities described above. As part of the exercise debriefing, there will be a review of how the exercise achieved the learning objectives and its relevancy to key business and operational management concepts. Lastly, the exercise will be summarized including reactions and responses from students who have participated in the exercise and ways to customize.

**Keywords:**

**Experiential Exercises, Operations Management, Change Management, Group Activity**

**Introduction**

Responding to change has become a critical workforce competency and an essential skill for effective leadership and management. The ability to work in group-based environments and across functional boundaries is a key requirement of modern management practice (Piercy, 2013). Additionally, workplaces expect their employees to have interactive and creative capabilities and qualities such as team work, problem solving, and initiative (Clements & Cord, 2013). It is no longer enough to merely share operational lessons with students, students need to experience these lessons and have the ability to respond in real-time and self-reflect on their responses. As a result, the use of experiential learning techniques has become popular in business education and offers major benefits for teaching management practices (Piercy, 2013).

Educators have responded to these workforce demands by cultivating and developing students prepared for a variety of workplace challenges through the use of experiential exercises (Clements & Cord, 2013). Bridging the gap between the classroom and the world of real-life business operations, experiential learning exercises allow students to design, implement, and control business strategies and concepts and in some cases provide students the ability to think in strategic ways, solve complex problems, and integrate knowledge across business functions (Xu & Yang, 2010). Additionally, students not only have the opportunity to apply their knowledge in a practical context, they will also maximize their personal learning outcomes with the added advantage of being better equipped to compete in an increasingly competitive marketplace (Clements & Cord, 2013).

Specifically, this exercise exposes students to business and operational fundamentals and the intersectionality of people (workers and customers), processes, and products. This exercise has been used in an operational management lesson as part of a hospitality and tourism core course. This exercise simulates operational management processes, exposes students to operational constraints, and requires students to react to frequent changes in customer demand. This exercise provides a creative and interactive activity that can be manipulated to fit and teach several core business and operational concepts and theories.

Lastly, debriefing the exercise provides a framework to guide reflective learning. According to Piercy (2013), experiential learning activities all share a common aim of encouraging the student to look back on what has happened, critically framing the process, reflecting upon the choices made, and how different actions may have led to improved or poorer outcomes. The structured debrief as part of this exercise allows the student to frame each step of the activity and relate it to business and operations management concepts while allowing the instructor to validate perceived student behavior and offer suggestions for areas of personal reflection.

**Instructions to Facilitate the Activity**

This operational exercise is highly active and relatively simple to facilitate. Additionally, it can be customized for your specific course(s) using the core concepts of the exercise to expose students to a variety of business and opreational management concepts and theories.

*Learning Goals*: Upon successful completion of this exercise, students/participants at a minimum will:

* Work collaboratively in teams to achieve goals
* Apply critical thinking skills to identify the most efficient processes in meeting customer demand
* Determine and adjust processes in response to external changes (customer demand)

*Approximate Timing:* The exercise timing fluctuates based on total available time and depth of student participation. On average, a minimum of 5 minutes is needed to introduce and set the stage for the activity, 30 minutes is required to facilitate the exercise with an additional 10 minutes allocated to debriefing the exercise; a total time of 45 minutes. The final debrief includes student reflection and an instructor debrief.

*Number of Participants or Group Size:* Each group should consist of five to seven participants. There can be one single group; however, there should be at least two groups to encourage competition during the exercise. Once students are formed into groups, each student will self-select a role.

* Role 1: Product retrieval and sorting (this can be 1 or 2 participants for groups larger than 6 participants)
* Role 2: Washer
* Role 3: Washer
* Role 4: Rinser
* Role 5: Dryer
* Role 6: Folder/Quality Assurance (optional based on number of students in each group. For groups larger than 5 participants)

*Materials Needed:* There are a several basic materials needed to facilitate this exercise. This exercise can be completed using electronic or hard copy instructions and will require a white board/marker or one piece of flip chart paper/marker to write instructions throughout the activity. Core materials for the activity include four, 16 oz plastic cups per group (4 total groups will require 16 plastic cups). Each group of cups should be labeled with permanent, black magic marker as the following which represent operational tools used in a laundry facility. Accordingly, the cups will represent process steps as part of the exercise.

* Washer, 2 minutes
* Washer, 2 minutes
* Rinser, 1 minute
* Dryer, 3 minutes

Next, sheets are needed as part of the exercise. Depending upon how frequently the exercise will be used, there are two options to create your sheets. As part of option one, you can purchase a small remnant of white fabric and cut the fabric into the following quantity and sizes (based on running 4 total groups, a class size of 20-28):

* 6 inches by 8 inches, 20 total
* 6 inches by 9 inches, 20 total
* 6 inches by 10 inches, 20 total

Each sheet should be labeled with pen on one corner as K (King), Q (Queen), or F (Full). This one mark represents how challenging it is to determine sheet size in an operation as the only way to distinguish size is by the color of stitching on one side of the sheet. For option two, you can use tissues to represent sheets. Although they will be the same size, it does not have an impact on the exercise experience for students. You will need 60 tissues, unfolded and labeled with pen on one corner as K (King), Q (Queen), or F (Full).

Lastly, you will need a copy of instructions and rules per group, “Operating a Linen Facility Activity Guidelines”. Please refer to this document in Appendix A. It is recommended to have this printed out for each group and display using a projector, if available, as it makes it easier for the instructor to review the instructions as this activity incorporates timed activities/process steps. As a majority of students have a cell phone, timers have not been required to be provided by the instructor.

*Appropriate Level:* This can be (and has been) incorporated into any level of training or education (e.g. undergraduate, graduate, or executive).

*Preparation needed before class by students:* There is no student preparation required. Students should be encouraged to bring/use the timer on their phones the day of the activity based on their self-selected role.

*Preparation needed by instructor:* Prior to the activity, the above materials must be prepared and the instructor should be familiar with instructions to execute the exercise to remain within suggested timing of activity parts.

*Describe in detail the steps and timing involved in doing the exercise:* In this next section, details on how to facilitate the exercise will be described. Prior to announcing to students that they will be participating in an exercise, arrange all materials on a desk in the front of the classroom. Materials should include sets of cups (four cups in each group) and a pile of sheets (the sheets should be all mixed up). I have found that placing materials with little discussion builds excitement and curiosity in the students. I use this exercise at the conclusion of an operational management lesson focused on laundry facilities, a core function in the hospitality and tourism industry. Whether this lesson is part of standard curriculum or not, this activity can be adjusted to simulate manufacturing or general process steps. For example, you can still use the cups and timings but no longer label them as a piece of equipment in a laundry facility. Additionally, rather than using sheets, you can use paper clips (different sizes and colors) that represent widgets. Refer to Appendix D for an alternative set up of this exercise.

When you are ready to begin the activity, explain to students that they will participate in an operational simulation. Students will run and operate a laundry facility. Review the basic operation of a consolidated, shared laundry facility. Explain, this facility is a consolidated laundry facility that serves seven sister hotel properties that each have 600 or more hotel rooms. The facility operates nearly 24 hours to provide clean linen to each location. In order to provide the correct amount of linen, each property has to be aware of their inventory levels and usage particularly, as the entire linen inventory is shared in a consolidated operation. This means that any given sheet could travel across the properties. The typical process is for an operations leader to provide a count of inventory that is needed daily based on hotel arrivals and departures. At this particular facility, the facility has been encountering linen shortages as the facility is equally distributing linen due to internal shortages. As a result, operational leaders frequently call for linen. Additionally, PARs (inventory levels) are poorly managed which also requires operational leaders to frequently change their linen requests. Review the basic operational flow of the linen facility (retrieval, wash, rinse, dry, fold/quality assurance). Refer to appendix B.

*Group Formation*: Next, divide students into a minimum of 2 large groups. There is not a total group maximum. In advance, the instructor has to ensure there are enough sheets and cups to facilitate the activity based on the pre-determined total group size. Each group should include 5-7 students. Ask one student per group to come collect their group’s cups .Once students are in groups, have the students self-select their role/tasks within their group. These roles directly align to the basic operational flow just reviewed. Refer to Appendix B.

* Role 1: Product retrieval and sorting (this can be 1 or 2 participants for groups larger than 6)
* Role 2: Washer
* Role 3: Washer
* Role 4: Rinser
* Role 5: Dryer
* Role 6: Folder/Quality Assurance (optional based on number of students in each group; for groups larger than 5 participants)

Now that students are in groups and each student has a role, review material associated with the activity and the role assignments.

* There are three sheet sizes. Hold up a sheet and show students the sheet label. Explain how in a real operation, it is just as difficult to identify sheet size quickly.

Review each role and constraints (Appendix A).

* Role 1: Product retrieval and sorting (this can be 1 or 2 participants for groups larger than 6). This participant’s job is to retrieve dirty sheets. The instructor should point to the pile of dirty sheets. At this time, the instructor should also review the markings on the sheets that differentiate the sizes.
* Role 2: Washer. This participant operates the washer as part of the process. This participant is responsible to keep time (this student should have a timer available on his/her phone) and ensure that the appropriate weight is in the machine. This participant must also make sure that the guidelines are followed for what equipment can be running simultaneously.
* Role 3: Washer. This participant operates the washer as part of the process. This participant is responsible to keep time (this student should have a timer available on his/her phone) and ensure that the appropriate weight is in the machine. This participant must also make sure that the guidelines are followed for what equipment can be running simultaneously.
* Role 4: Rinser. This participant operates the rinser as part of the process. This participant is responsible to keep time (this student should have a timer available on his/her phone) and ensure that the appropriate weight is in the machine. This participant must also make sure that the guidelines are followed for what equipment can be running simultaneously.
* Role 5: Dryer. This participant operates the dryer as part of the process. This participant is responsible to keep time (this student should have a timer available on his/her phone) and ensure that the appropriate weight is in the machine. This participant must also make sure that the guidelines are followed for what equipment can be running simultaneously.
* Role 6: Folder/Quality Assurance (optional based on number of students in each group. For groups larger than 5 participants). This participant collects completed sheets (sheets that have went through the wash process—washer, rinser, dryer). This participant folds the linen and prepares the order to be delivered. This participant should also monitor the process and ensure there is no interruption in the processes.

Review the learning objectives of the activity which include (refer to Appendix C).

* Apply critical thinking skills to identify the most efficient processes in meeting customer demand
* Work collaboratively in teams to achieve goals
* Experience external changes (customer demand) and determine appropriate responses to the change

Now that participant roles have been discussed, the instructor will review the operational criteria or constraints for operating this facility (Appendix A).

* There are several operational constraints in the facility:
  + If Washer 1 and 2 are running, there is not enough electric to run the Rinser or Dryer
  + Rinser 1 and Washer 1 can run at the same time
  + Only 3lbs can be put in each washer at a time
    - King 2lb
    - Queen 1lb
    - Full 1lb
  + The Dryer can only be run with the Rinser
  + The Dryer can hold 6lbs
  + The Rinser can hold 4lbs

Furthermore, the instructor must explain that sheets must go through the entire process without interruption and waiting or the batch of sheets will have to start the process over again. For example, if you have linen in the washer and there is 30 seconds left before a batch comes out of the rinser, the sheets have to re-start the process again. Breaks in the process represent issues with cleanliness and quality standards as part of the process. Additionally, you cannot simultaneously add sheets to any of the equipment; participants must wait for a new cycle to start. If students require examples, relate the exercise to how students would do their laundry. *Would you add more dirty clothes to the washer if the washer has already moved to the second cycle (No, there would not be appropriate detergent to wash the additional clothing)? Would you remove clothes from the dryer half way through the cycle (No clothes may still be wet)? Would you leave wet clothes in the washer overnight (No, they may develop a smell from sitting)?*

*Starting the Activity.* During the first round, the activity starts slow as the processes are timed sequentially. Each student that is a washer, rinser, or dryer should have out a phone to set up a timer. To start the activity the instructor calls out an order and writes it on the whiteboard or flip chart paper. The instructor should also stress that each group will be judged based on how quickly they can process the order.

The first order: 5 kings, 6 queens, 2 full.

During the first round, students will get acclimated to their roles and checking weights. The instructor should walk around the groups and ask if there are questions or clarification needed. The activity starts slow as “the line gets wet”, meaning the facility operation is starting and there is timing associated with each step of the process. Allow 8 minutes, this timing will allow each group to have a minimum of one batch of sheets go through the entire process. Call attention and state, “We have an order change!” Provide a new order and write it below the first order on the flip chart or whiteboard.

The second order: 3 kings, 8 queens, 8 full.

At this point, you should see students start to run to get more sheets and may even experience that some are just grabbing more than what they need which will cause a shortage for other groups. Do not ask groups to share or direct groups to distribute sheets to other groups. You can allow the groups to organically change their process and behavior if they so choose. Allow this next round to run for 4 minutes. Call attention and state, “We have an order change!” Provide a new order and write in below the second order on the flip chart or whiteboard.

The third order: 4 kings, 6 queens, 5 full.

You can do as many rounds as you feel necessary for students to engage and experience a chaotic operation. As with this round, you want students to engage longer than the first 2 rounds, as each group should be operating their equipment fairly flawlessly. At this point as the instructor, I often walk around and request machine operators to take out their sheets for me to check. In this case, if they do it, I make the group send that batch of sheets back through the process because the process was interrupted. Additionally, based on the sheets (material or tissues), I will search through and reject some pieces of linen as not meeting quality standards. Allow this next round to run for 6-8 minutes. I also frequently ask, “Is the order done, I need my linen!”

Again, call attention and state, “We have an order change!” Provide the final order and write in below the third order on the flip chart or whiteboard.

The fourth order: 5 kings, 6queens, 2 full.

The last round is the same order as in the first request. Allow the final round to take place for at least 6 minutes and call stop.

*Debriefing the activity:* Immediately ask students about their experience. As the instructor you should ask the following questions to elicit student’s experiences:

* What were the challenges or frustrations in the group/your role?
* How did you feel with the changes in the order?
* What strategies did your group adopt?
* What did you notice about the proximity of where you sat/your role/placement of the equipment you were using (for example, did you sit or arrange in the order of the process as a group)?
* Did you watch/pay attention to other groups? Why or why not?

The instructor should highlight the following:

* If the groups would have stayed on track each time verses changing, they would have completed the required order before the end of the activity.
* Discuss student/group behavior. Below are typical observations from the activity:
  + Groups start with sorting and selecting sheets in the front of the room that they need to complete the order. As the activity progresses and there are less sheets, students begin to randomly grab sheets and sort back at group. This may have caused shortages in other groups or demonstrating hording.
  + The intensity of competition grew each round.
* Describe participate reactions to each change. Below are typical observations from the activity:
  + Giving up, a student does not want to continue the activity.
  + Group/student becomes flustered and is unable to perform the task at hand. Requires guidance or encouragement to continue.
  + A student takes on a leadership role of the group and determines the strategy to process the orders.
  + Students steal sheets from other groups or barter

After the student and instructor led debrief, the instructor should ask students the last following questions to encourage students to think about relevance to work tasks and dealing with constraints and changes in operations.

* If this was your operation, how would you improve it?
* Change, breakdowns, and errors are common occurrences in many processes, how or what can you do to prevent it in the future?
* How would you help an employee manage and handle an operation that runs similarly to this one?

**Summary of Student Reactions**

Students have fully engaged in this activity. Often, this activity has been used in back to back sessions in this operations class. Students prior to the second class have approached me and excitily discussed how they know they are doing an “awesome activity”. Most recent comments include:

* “This activity is brillant. How did you think of it? It made learning fun and challenged us at the same time.”
* “I heard about this class from another student and how enlightning the activities are. He was right. In this activity I learned a lot about how I deal with change.”
* “This exercise made the lecture come to life. I didn’t realize how challenging operational constraints with changes can be nor how important working well in a group had on the final outcome.”

**Presentation at ELA**

For the Experiential Learning Association session at the Eastern Academy of Management, I will jump right in to the exercise with a breif overview of operations management and establishing context of the activity and shorten the rounds of the activity to fit the time limit associated with a session.

*Opening* (5 minutes): The simulatied operations exercise will be introduced and the corresponding learning objectives will be reviewed. I will jump right into the activity and tell participants that they are going to run a laundry facility! I will review the general operation process of a laundry facility and how this operation, although it specializes in linen, can represent any operation with process steps and production influenced by customer demand. I will distribute and set up materials while arranging participants into small groups and assign each participant a role to participate in the activity.

*Activity*(15-20 minutes): Participants will engage in the activity and will complete three rounds.Total number of rounds will be based on available time in the session. Each round averages 6 minutes (18 minutes).

*Closing* (5-10 minutes): At the conclusion of the activity, I will ask educators to share their reactions to the activity and feedback about their students potential reactions to this type of exercise. Finally, I will close with a brief discussion of how this activity can be adjusted and related to other business management and theory concepts.

**References**

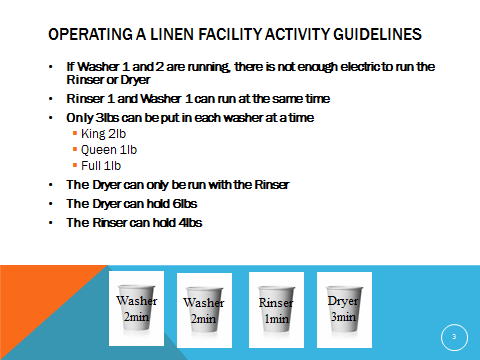
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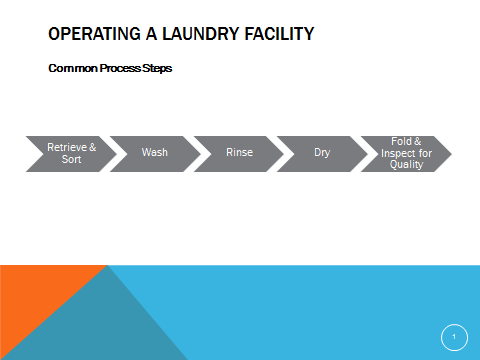
Appendix A

This document is prepared and displayed in PowerPoint. This document describes the rules or operational constraints of the exercise. It is recommended to have a hard copy print out for each group as well as display.



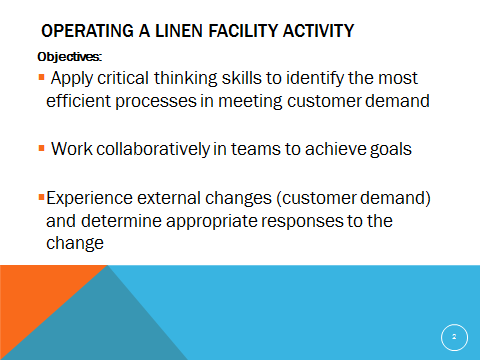
Appendix B

This document is prepared and displayed in PowerPoint. This document visually displays the common process steps of a laundry facility in preparing clean linen.



Appendix C

This document is prepared and displayed in PowerPoint. This document lists exercise learning objectives.



Appendix D

This document is prepared and displayed in PowerPoint as an alternative format of this exercise. This document describes the rules or operational constraints of the exercise. It is recommended to have a hard copy print out for each group as well as display.

